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SAILING DIRECTIONS.

THE
DARDANELLES, SEA OF MARMARA,
AND
THE BOSPORUS.

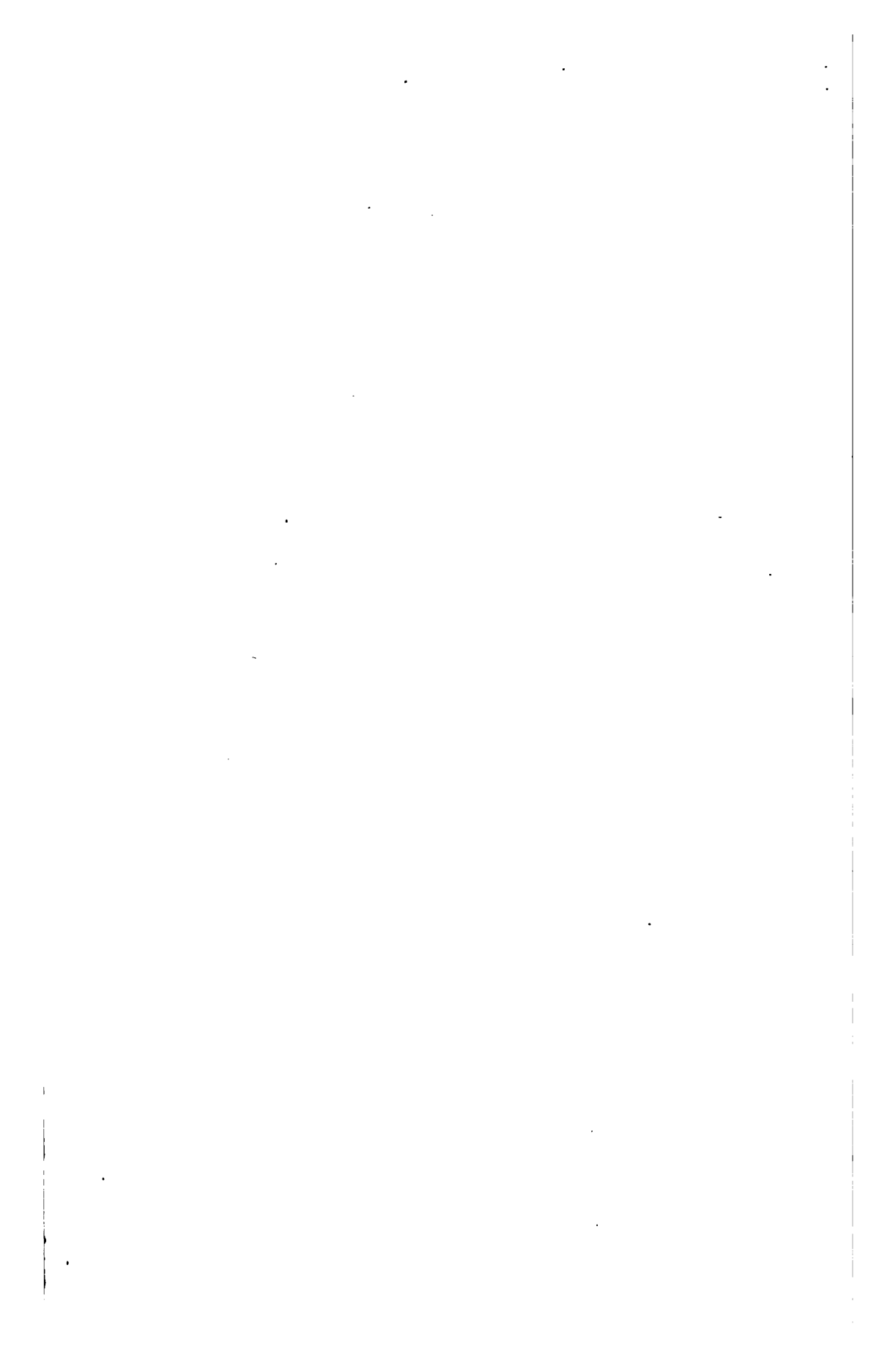
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SAILING DIRECTIONS

FOR

THE DARDANELLES, SEA OF MARMARA,

AND

THE BOSPORUS.

SECOND EDITION.



PUBLISHED BY ORDER OF THE LORDS COMMISSIONERS OF THE ADMIRALTY.

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1877.

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ADVERTISEMENT TO SECOND EDITION.

THIS work contains sailing directions for the Dardanelles, Sea of Marmara, and the Bosphorus.

The first edition, a translation of the "*Instructions nautiques sur le détroit des Dardanelles, la mer de Marmara, et le Bosphore*," by M. Le Gras of the French Imperial Navy, 1853, was—with a few additions by Captain T. A. B. Spratt, R.N.—published in 1855.

In the present edition the work of M. Le Gras has been revised by Staff Commander John Cumins Richards, R.N., from the following marine surveys, namely:—the Dardanelles, by Captain T. A. B. Spratt, R.N., 1855, and Commander W. J. L. Wharton, R.N., 1872; sea of Marmara by Captain Manganari, of the Russian Imperial Navy, 1845–1848, and Commander Wharton, R.N., 1872; the Bosphorus by MM. Ploix and Manen, under the direction of Admiral Hamelin of the French Imperial Navy, 1854. Useful information has also been added from other documents in the Hydrographic Office.

Notice of errors or omissions should be sent to the Secretary of the Admiralty for the improvement of the work and for the benefit of the navigator.

F. J. E.

Hydrographic Office, Admiralty, London.

February 1877.

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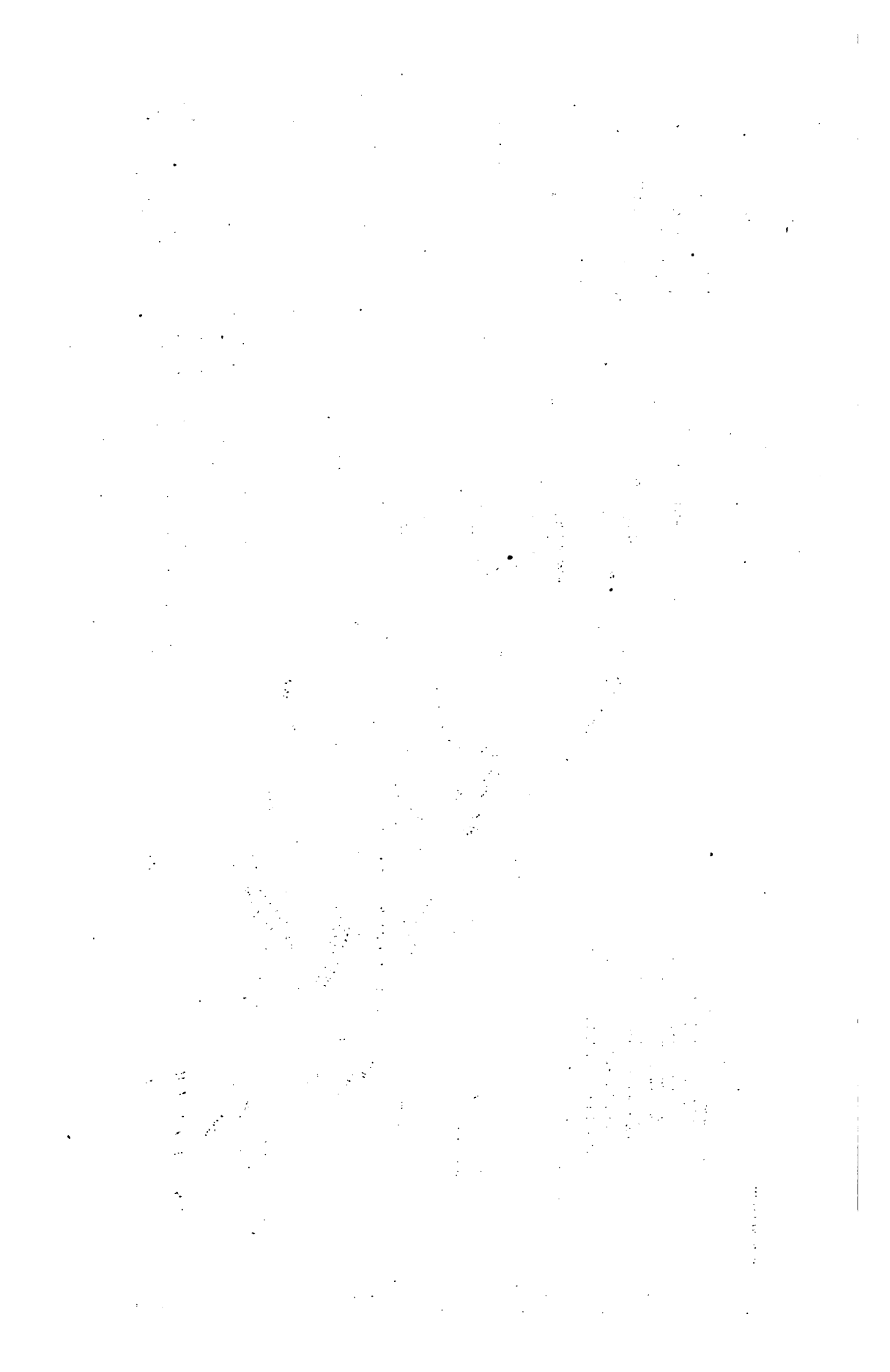
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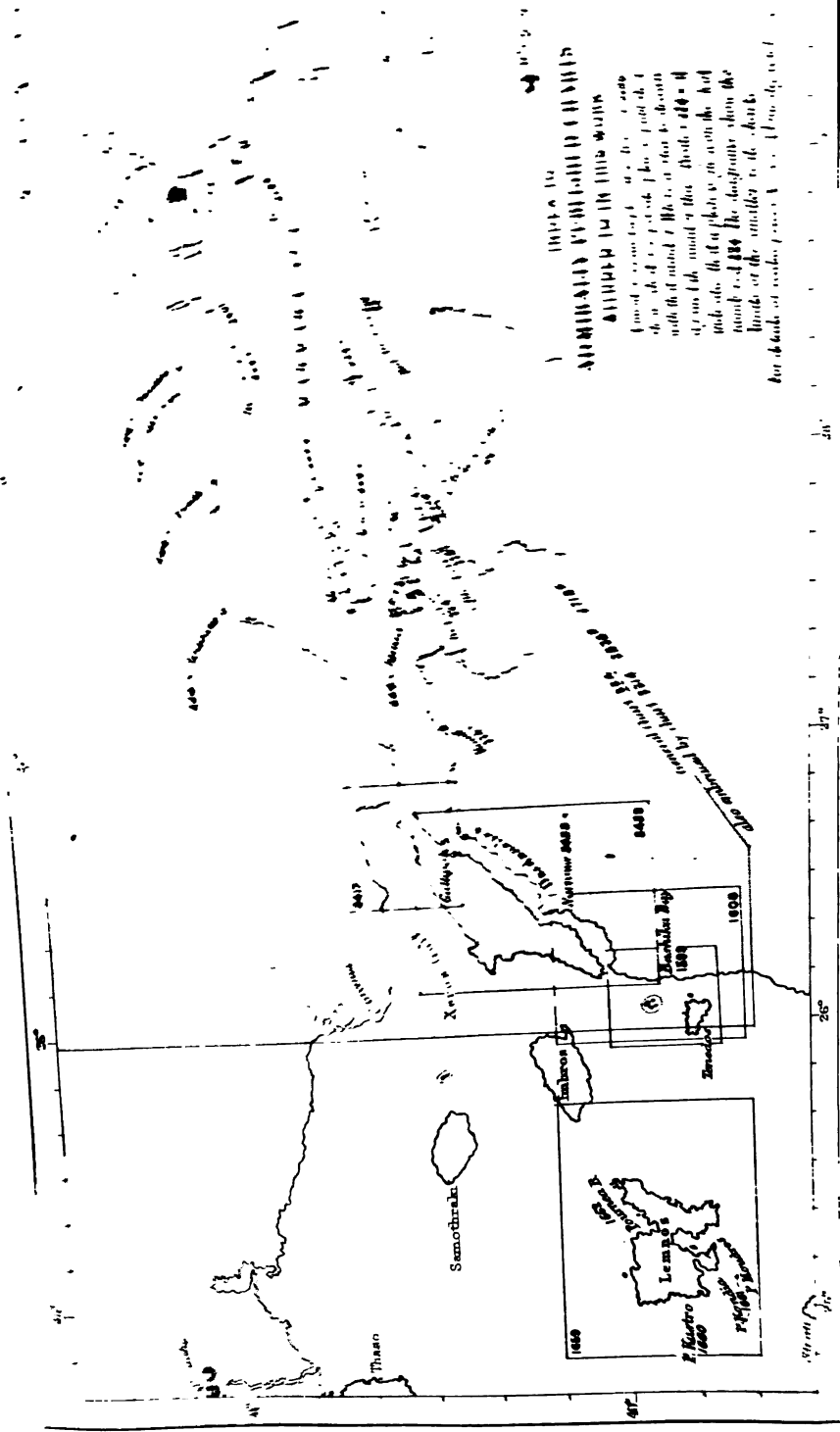
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**IN THIS WORK THE BEARINGS ARE ALL MAGNETIC,
EXCEPT WHERE MARKED AS TRUE.**

**THE DISTANCES ARE EXPRESSED IN SEA MILES OF
60 TO A DEGREE OF LATITUDE.**

**A CABLE'S LENGTH IS ASSUMED TO BE EQUAL TO
100 FATHOMS.**





SAILING DIRECTIONS

FOR THE

DARDANELLES, SEA OF MARMARA, AND THE BOSPORUS.

CHAPTER I.

APPROACH TO THE DARDANELLES.

Variation in 1877 - - 6° 25' W.

TENEDOS ISLAND, called by the Turks Bokhtcha Adassi, is $3\frac{1}{2}$ miles to the N.W. of the cape on which is built the little Turkish village Eski Stamboul (old Constantinople, ancient Alexandria Troas), on the coast of Anatolia, and 10 miles to the S.W. of cape Yeni-shehr or Janissary, at the entrance of the Dardanelles. This island, lying almost opposite the mouth of the strait, which it might command in case of need if it were fortified, is 6 miles in breadth from west to east, and $3\frac{1}{2}$ miles in length from north to south, and is separated from the coast of Anatolia by a channel 3 miles in width, in which the soundings vary from 7 to 13 fathoms. On the north-east point of the island rises a conical mountain 625 feet above the level of the sea, named mount Elias, or mount Toro, which is a conspicuous object to vessels approaching from the westward.*

To the S.E. of mount Elias, and at a short distance from it, a lower mountain is seen, 410 feet high, named mount Sana, on the summit of which stands a monastery; at the foot of this mountain on the north-east point of the island on the sea side, is built the town of Tenedos or Castro. It is a small town, the houses of which are almost all built of wood, surrounded by gardens, and defended by a fort with white walls, on which the Turkish flag floats by day and night.† In 1853 the population was 5,000.

* See Admiralty charts:—Mediterranean, sheet 3, No. 2718; Archipelago, No. 2836b; Entrance to the Dardanelles with Tenedos and the plain of Troy, No. 1608; Cape Eski Stamboul to Koum Kaleh, including Bashika bay and Tenedos island, No. 1599.

† Tenedos formed very anciently a small isolated kingdom. Virgil supposes that the Greeks, when they pretended to leave the siege of Troy, leaving behind them the wooden horse, went to hide themselves behind this island. Given in 1376 to the Genoese by Andronia Paleologue, it was soon after taken from them by the Phœnicians, then was conquered by the Turks; the Venetians occupied it for a brief time in 1656, it then returned under Turkish dominion and has remained so ever since.

The island produces oil and wine, held in great estimation at Constantinople. With the exception of the parts in the neighbourhood of the town, which are hilly, it is generally flat. Water and provisions are to be had for vessels that put in through stress of weather.

Tenedos is free from dangers on its eastern side, and all along the south coast. With the wind from north and N.E., it is prudent to anchor sometimes to the southward of the island, at rather less than a mile from the shore, sandy bottom, in 13 to 19 fathoms water; but it is not the same with respect to its northern and north-western sides, which are surrounded by dangerous rocks, forming a continuous shoal which extends 2 miles to seaward.

The port of Tenedos, on the north-east side of the island, is small, and can only afford shelter to small vessels. Its northern point is terminated by a jetty, extending a cable to the eastward, and which shelters it sufficiently from northerly winds (Tramontanes), which are very often violent in the Archipelago. The bottom is composed of weeds and sand. The depth of water, which is 3 to 6 fathoms at the entrance, gradually diminishing to the head of the harbour, where there is only 3 feet.*

A small vessel may anchor in the port of Tenedos, at three-quarters of a cable to the southward of the mole, in 12 feet water, with the eastern point of the mole bearing E. by N. $\frac{1}{2}$ N., and the mosque of the fort N.W. $\frac{1}{2}$ W. For greater safety a hawser might be made fast on the mole.

Large vessels may anchor in the channel between Tenedos and Gadaro islands, at 4 cables to the eastward of the head of the mole, in 8 to 9 fathoms, weeds and sand bottom; in this berth the two mills which are to the north of the town of Tenedos bear N.W. by W. $\frac{3}{4}$ W., Kou castle W. $\frac{1}{2}$ N., and the mosque of the town W. $\frac{3}{4}$ S. This anchorage, though it affords shelter from west, south, and south-west winds, is much exposed to north and north-east winds; the sudden shifts of wind to the N.E., which are frequent and dangerous in winter, should be guarded against.

Captain Lord Clarence Paget, H.M.S. *Aigle*, 1845, remarks, "the anchorage off (eastward of) Tenedos is said to be very unsafe, nevertheless I rode a fresh gale and had a heavy heave to get the anchor up. The centre of the castle bore W.N.W. and Gadaro island N.E.; depth of water 9 fathoms." Captain T. M. C. Symonds, H.M.S. *Arethusa*, 1853, remarks, "We anchored $1\frac{1}{2}$ cables east of the mole head, in 9 fathoms, on a bottom of stiff mud, and the anchor held well." H.M.S. *Vengeance*, Captain Lord Edward Russell, 1853, anchored in 9 fathoms, E. by S. from Tar point, and found the bottom a thin sloppy mud.

Petro islet is a small rock rising a few fathoms out of the water, and

* See plan of port and town of Tenedos on Admiralty chart, No. 1608.

lying a third of a mile N.E. by N. of Mela point, at the foot of mount Elias. There is a depth of 4 to 5 fathoms around it.

Talbot rock, a cable to the westward of Petro islet, is a rocky shoal a quarter of a mile long in a N.N.E. and S.S.W. direction, and has 3 feet least water. The shoal is steep on its west side.

Streblos islet.—To the westward of Talbot rock, distant nine-tenths of a mile, is a group of sunken rocks, in the midst of which is Streblos islet. This group forms a bank which extends a mile to the north of the coast of Tenedos.

Shimal rock.—To the westward of the bank mentioned is another large group of sunken rocks, on which the depth varies from 3 feet to 6 fathoms. They form round the north-west point of Tenedos a dangerous belt, which extends 3 miles to the N.E. and $1\frac{1}{2}$ miles to the west of Ponente point. In the middle of the bank, and a third of a mile from the land, is Keraki, a small rock above water. Shimal rock lies $2\frac{1}{2}$ miles N.E. by E. from Ponente point, and has 15 feet least water. Gadaro island, three times its length, open east of Petro island, leads half a mile to the north-east of the shoalest part.

LIGHT.—On Ponente point, the west extreme of Tenedos, stands an iron tower, 49 feet high, painted white, which exhibits at an elevation of 59 feet above the sea, a *fixed* white light, visible in clear weather from a distance of 14 miles.

RABBIT ISLANDS (ancient Lagussæ) is the name given to a group of four islands lying 4 or 5 miles to the N.N.E. of Tenedos, and 6 miles W.S.W. of cape Yeni-shehr. The Turks name them Tacohan Adassi.

The two southernmost islands, Phido and Drepano, the latter to the westward and Phido to the eastward, are surrounded by shallow patches which extend more than a third of a mile east and west. Mavro island, just open of the mills on cape Yeni-shehr, bearing N.E. by E. $\frac{1}{4}$ E., leads west of the spit off Drepano island. There is no passage between Phido and Drepano, but the channel which separates them from Tenedos is 4 miles in breadth, and free from obstacles, with soundings which vary from 13 to 23 fathoms. The bottom is composed of mud and weeds on the side of Tenedos, and sand and rocks on the side of the islands. The current sets to the westward at the rate of about a knot.

Aldridge rock, having a depth of 5 fathoms, lies S.E. by E. $\frac{3}{4}$ E. half a mile distant from the south-east point of Phido.

Mavro.—The largest of the group lies a mile N.W. by N. of the two smaller ones. It is a mile in length from west to east, half a mile broad, and is surrounded by shallows with a sandy bottom.

On Mavro there is a fountain and a well, where water is easily procured.

Praso island.—At a third of a mile from the south-west point of

Mavro is the fourth of this cluster, named Praso or Western island, which is small, low, and joined to Mavro by a line of breakers. Between Mavro and Praso lies a small rock named Mikro. Smith shoal, a patch of 3 fathoms and steep too, lies a third of a mile W.N.W. of Praso.

The channel between Mavro to the north and the two small islands Drepano and Phido to the south is half a mile in breadth; the depth of water is from 6 to 12 fathoms, the bottom mud and weeds. A vessel may anchor in any part of the channel, and have shelter from northerly winds by the island of Mavro. In passing through this channel it should be remembered that the current sets sharply to the westward, and in order to keep in mid-channel as much as possible the southernmost part of the village Yeni Kioi (coast of Anatolia) should be kept in line with a peaked hill in the interior, bearing E. $\frac{1}{8}$ N.

Aird shoals.—To the north of Mavro, and extending upwards of a mile in that direction, by half a mile broad, are Aird shoals, composed of hard sand interspersed with rocks, on which the depths vary from 4 fathoms to 3 feet. Some of the rocks are uncovered. Aird shoals are separated from Mavro by a narrow channel, in which there are 4 to 5 fathoms, rocky bottom. In passing through this channel, keep about $2\frac{1}{2}$ cables from the northern shore of Mavro, allowing for the currents which set strongly to the S.W.

Mansell shoal, similar in every respect to Aird shoals, lies at two thirds of a mile N. $\frac{1}{4}$ E. of the most northern point of Mavro, and three-quarters of a mile N.W. by W. of Aird shoals, from which it is separated by a channel 4 cables in breadth. A vessel may pass through this channel, which has soundings varying 6 to 13 fathoms, bottom rock and shells; but to attempt the passage the direction of the currents should be well known.

Loney bank, $2\frac{1}{2}$ miles N.E. by N. from Mavro, has a depth of 7 to 9 fathoms over it. It is small, and is easily avoided from the following bearings, which give its exact position: Drepano island in line with the eastern point of Mavro, and the mills on cape Yeni-shehr bearing E. $\frac{1}{2}$ N.

LEMNOS ISLAND—Moudros bay.—Mr. W. T. Mainprise, master, H.M.S. *Britannia*, 1853, remarks that Moudros bay is an excellent anchorage for a fleet: it is open to the south-east, and in winter it would be safer to go into the inner harbour, port Moudros, which is perfectly landlocked, and where there is anchorage in 5 to 9 fathoms water. Captain Copeland's chart of Lemnos island (No. 1659) is a far better guide than any of the Archipelago pilots can be, few of whom have any knowledge of port Moudros. Bouda point, the south-east point of the entrance to port Moudros, being composed of low white cliffs, cannot be mistaken; the leading marks given on the chart are easily identified. A stranger may

enter the port by passing Bouda and Sangrada points at a distance of one or 2 cables, and immediately Meganoros point opens north of Sangrada point, steer mid-channel N.E. by N. The shoal which borders the points mentioned, shows plainly under most circumstances, consequently the starboard side of the channel is the safer to keep upon. In the north-east angle of port Moudros is a high remarkable rock close to the beach.

The first peak or rise of the land within the isthmus of Kastrá in line with Sangrada point leads to the eastward of Kaloyeri rock, and of the banks to the northward, in 4 fathoms: this line also serves to mark the western limit of the anchorage for large ships: the eastern limit of such anchorage is the centre of Talikna village in line with the west extreme of the high remarkable rock until abreast Ispatho islet.*

The following remarks on port Moudros are by Captain M. Bowden-Smith, and Staff Commander John Phillips, H.M.S. *Hercules*, 1876 :—

Port Moudros, affords shelter for a considerable number of large vessels, but there are several shoals, namely the south-east extreme of the shoal surrounding Black rocks, the shoal ground extending westward of Meganoros point, Kaloyeri rocks, and the shoal head lying S. by W. $\frac{3}{4}$ W. 4 cables from cape Pavlos, which it would be advisable to buoy.

The village of Talikna may be readily known by the cupola of the Greek church. The trees, formerly used as a landmark, north-west of the village have been cut down. The village of Baros is not easily distinguished, the houses being of the same colour as the soil.

Supplies.—A small number of bullocks of an inferior kind may be purchased. Both cattle and sheep might be obtained by giving timely notice.

Water can be obtained from a small river, the mouth of which is $1\frac{1}{2}$ miles eastward of cape Malathria. In the month of August a fair supply may be obtained; a launch may then approach within 50 or 60 yards of the beach, and the water can be pumped from a place about 12 yards inshore, where it is quite fresh. Nearly half a mile to the southward of the river a small quantity of water may be obtained from a well which is conveniently situated for boats.

In the dry season the other rivers in the bay are either brackish or salt, but affording evidence of having a plentiful supply of water during the rainy season.

The only means of communication is by a caique once a fortnight from Kastro (where the governor resides) to Tenedos island.

Guerrière rock.—A small sunken rock having a depth of 4 feet, was said to have been discovered some years previous to 1834 by the French

* See Admiralty charts, Lemnos island, No. 1659; Port Moudros and port Kondia, No. 1661; scale, $m = 1$ inch.

vessel of war *Guerrière*, off the south-east side of Lemnos island, about 3 miles W.S.W. of cape Irene. This rock was not found during Captain Copeland's survey in 1835. Mr. W. T. Mainprise, Master, R.N., remarked (1853) that he searched for the rock under favourable conditions of wind and weather, but without success.

From inquiries made by Commander W. J. L. Wharton, H.M.S. *Shearwater*, during a visit to Lemnos in November 1872, it was found that *Guerrière* rock was unknown to the fishermen of the island or to the masters of the native vessels who were interrogated by him, including some who had passed their lives in running between Moudros and Strati, on which route is the assigned position of the rock. The inquiry was supplemented by an unsuccessful search in the locality. It may therefore be considered that *Guerrière* rock has no existence.

Kharos bank lies to the eastward of Lemnos island, abreast of the point of that name, of which it is a prolongation. It is formed by a group of sunken rocks, and shallows which extend 10 miles to the eastward of Kharos point, and on which the depth varies from 7 fathoms to 9 feet. The bank is easily recognized by day by the colour of the bottom; but vessels should give it a wide berth, as southward of the bank the current sets to the northward at the rate of a quarter of a knot an hour.

CAPE ESKI STAMBOUL (coast of Anatolia) is a sand hill of moderate height, which inclines a little to the westward, and on which the Turks have built a village bearing the same name. It is built mostly on the ruins of the ancient town of Alexandria Troas (or New Troy), founded by Alexander the Great.*

In the environs of Alexandria Troas there is found a sort of stunted oak, which produces valonia. The fruit is eaten when cooked, and the shell is employed in tanning and dyeing. The crops in the plain are abundant.

Suffren Shoals.—Cape Eski Stamboul is surrounded by a bank of rocks and sand, which extends $1\frac{1}{2}$ miles out to the N.W., and on which there are only 6 to 9 feet water. To avoid these shoals, keep the gap just inside of Paleo-Kastro village N. by E. $\frac{1}{2}$ E. in line with Youkyeri point.†

Youkyeri bay.—All that part of Tenedos channel comprised between cape Eski Stamboul, Youkyeri point, and Tenedos island, forms a bight in which a vessel may work sheltered from the sea, taking care to tack on approaching the coast of Anatolia when the lead gives 6 fathoms. The depth is generally from 7 to 15 fathoms, and of a variable nature. A vessel

* Numerous antiquities are to be seen to this day, not far to the westward of this village, of which the most remarkable are the remains of a large theatre, the ruins of a palace, an aqueduct, mineral water baths, and a large outer wall. The port of Alexandria Troas is at the present time entirely filled up and separated from the sea by a strip of low land. It was a basin 400 feet in length by 200 in breadth.

† See view B. on Admiralty chart, No. 1608.

may anchor in all parts of this bay, in calm weather, but with fresh north and north-east winds it would be prudent to anchor in Youkyeri bay, at about three-quarters of a mile from the shore, in 7 fathoms, bottom mud and sand, with the largest of the Gadaro islands, bearing N.W. by W. and Youkyeri point North. Abreast of this roadstead is a vast forest of oak trees, the timber from which is used at Constantinople for shipbuilding. There are several wells, where water might be procured if it were easier to effect a landing in boats.

YOUKYERI SHOALS.—Youkyeri point is 3 miles to the eastward of the town of Tenedos. Youkyeri shoals, a wide bank of sand and rocks on which the depth varies from $1\frac{1}{2}$ to 4 fathoms, entirely surround Youkyeri point, and extend a mile to the west of the point. Petro island, touching or rather open to the southward of Great Gadaro islands, leads to the southward of Youkyeri shoals.

OCEAN ROCK lies $1\frac{1}{3}$ miles W. by N. $\frac{1}{2}$ N. of Youkyeri point, half a mile E. by N. of Gadaro island, and according to the survey of Captain Graves, R.N., has 17 feet least water.* It is surrounded by a sand bank extending $1\frac{1}{2}$ cables in all directions, and on which there are $3\frac{1}{2}$ to 5 fathoms water. The edges of this bank are only distant a third of a mile from those of the Youkyeri shoals, and leaving between them a narrow channel, in which there are depths of $5\frac{1}{2}$ to 7 fathoms water. A vessel wishing to pass through this channel (which is not to be recommended from the difficulty there is in recognising the edges of the two banks) should keep the south-east point of Tenedos, bearing S.W. by S. The three mills on the south side of Tenedos harbour touching north side of Great Gadaro, and bearing S.W. by W. $\frac{3}{4}$ W. leads north-west of Ocean rock.

GADARO ISLANDS, two in number, are situated nearly a mile to the N.E. of the mole of Tenedos, and 2 miles W. by N. of Youkyeri point. They lie at a distance of a cable east and west, from each other, are of slight elevation, with a red appearance, and stand on a shoal and rocky bank which is about $3\frac{1}{2}$ cables long in an east and west direction.

The larger island, the easternmost, is nearly circular, about three-quarters of a cable in diameter, and forms with the Ocean rock a channel a third of a mile in breadth, and in which there are $5\frac{1}{2}$ to 10 fathoms water. The smaller island is a mere rock.

LIGHT.—On Great Gadaro island stands a lighthouse, 29 feet high, which exhibits at an elevation of 59 feet above high water, a *fixed and flashing red light* which shows a *red flash* every *two minutes*, and which in clear weather should be visible from a distance of 12 miles.

BASHIKA BAY, on the coast of Anatolia, is formed to the south of Bashika point, on which is seen the village of Paleo Kastro. It is of no

* This bank was formerly supposed to have only 10 feet water.

great depth, but is well sheltered from north and north-east winds by the point itself, and affords good anchorage in 7 to 10 fathoms water, bottom mud, weeds, and sand. The best berth is with Phido island bearing N.W. $\frac{1}{2}$ W., and the village of Paleo Kastro N. by E. $\frac{1}{2}$ E. A vessel would then be in $8\frac{1}{2}$ fathoms water, muddy bottom, and three-quarters of a mile from the shore. The water deepens gradually from the shore; a depth of 5 fathoms will be found at a distance of 5 cables from the shore in the north part of the bay, and one cable in the south part. The water is sufficiently clear to admit of the cable being seen on the bottom in a depth of 8 or 9 fathoms.*

Bashika bay is a safe summer anchorage, and is much resorted to by vessels of war cruising in the neighbourhood. Small vessels may obtain shelter from north winds by anchoring in 5 or 6 fathoms, at 3 cables from the shore.† During the months of June to October 1853, the wind prevailed from N.E., and was usually moderate enough for the boats to water. The anchorage is insecure with winds S.S.W. to N.W.; these winds cause a considerable sea.‡ As regards the quality of the holding ground in Bashika bay, Mr. Henry Paul, master of H.M.S. *Albion*, 1853, remarks, "From the circumstance of the *Albion*, as also one or two other ships of the squadron having started their anchors during the N.N.E. breezes, I cannot consider the holding ground good."

During the period June to October 1853, the current in the outer part of the bay sometimes ran to the southward at the rate of $1\frac{1}{2}$ and occasionally 2 knots an hour; but in the berth here recommended the southerly current was scarcely felt. An eddy occasionally set to the northward inshore of the anchorage.

Supplies.—Small cattle may be obtained, other supplies are scarce. Water may be obtained from a fountain at the bottom of the bay. Also from a large rivulet which is to the north, near some houses; but as the water is shoal some distance from the shore considerable length of hose is required.

Bashika point is surrounded by a flat which extends half a mile seaward, and also skirts the coast thence to the Dardanelles.

From Bashika point the channel formed by the coast of Anatolia and Rabbit islands is 3 miles wide, with a depth of 13 to 15 fathoms; bottom sand and shells to the east, and weeds to the west. This tract of coast forms a large bight, in which a vessel may anchor anywhere in calm weather.

* The combined fleet of Great Britain and France remained at anchor in Bashika bay from 13th June to 21st October 1853. Also a British fleet anchored in Bashika bay on 26th May 1876, and remained until 3rd January 1877.

† Remarks by Captain T. M. C. Symonds, R.N., H.M.S. *Arethusa*, 1853.

‡ Remarks by Captain Lord Edward Russell, H.M.S. *Vengeance*, 1853.

From Bashika point to cape Yeni-shehr, at the entrance of the Dardanelles, the coast of Anatolia is composed of sand and rocks, on which it is difficult to land in boats. $1\frac{1}{2}$ miles to the north of Paleo Kastro is the village of Yeni Kioi, built on a hill 180 feet above the level of the sea, and three miles N. by E. $\frac{1}{2}$ E. of Yeni Kioi is the village of Yeni-shehr, a little to the north of ancient Sigeum, and some hills said to be the tombs of Ajax and Antilochus.

The Plain of Troy is presumed to be to the eastward of this part of the coast.*

DIRECTIONS.—In making for the Dardanelles, the island of Tenedos is first sighted, to the north of which a vessel ought always to steer, if the wind allow of so doing. It is seen from a great distance, either from the westward or the southward; and, after having made it out, steer so as to pass either to the northward by the main channel which it forms with Lemnos island, or to the southward by that which it forms with the coast of Asia to the eastward. The first-mentioned passage is named Lemnos channel; the second, Tenedos channel.

On approaching Tenedos and the two channels mentioned, the influence of the currents of the Dardanelles are felt more strongly, *see* page 38. They are sometimes strong enough to oblige a vessel to anchor in light winds.

Lemnos Channel is formed by the island of Tenedos and Rabbit islands to the east, Lemnos to the west, and the island of Imbros to the

* As to the exact position of where the town of Troy stood, it is difficult to fix it precisely. Strabo of Cappadocia, who wrote under the reigns of Augustus and Tiberius, and who gives a description of these parts, leaves the question undecided, although some authors place ancient Troy at the foot of mount Ida, on the western side, on the border of Simois, at $5\frac{1}{2}$ miles to the eastward of the sea, and at 7 miles to the southward of the Dardanelles, near a Turkish village named Bounarbashi. The numerous ruins of this ancient capital of Troad, which are perceived near the village of Bounarbashi, were discovered in 1811.

The vast plain in the vicinity of Bounarbashi is flat, rich in verdure, and well cultivated; in some parts it is watered by numerous rivulets, of which the most remarkable are the Sarmander or Xanthus, and the Simois (now called the Mendere), which rises at the foot of mount Ida, crosses the whole plain of Troy, and falls into the Dardanelles, to the eastward of the Turkish village Koum Kaleh. The first is a quiet rivulet, fed by numerous springs which rise near the town. The second is an impetuous torrent which joins it.

From the end of November and during the winter, the greater part of this plain is inundated by the rains running down the mountains, which change all these streams into torrents. The numerous fragments of marble columns met with at every step, the vast ancient cemeteries, the remains of the girdle wall built under Laomedon, and that fable attributed to Apollo and Neptune, the traces of a great canal which seems to have been intended to join the Egean Sea with the Simois, and, lastly, the numerous tumuli seen on all sides,—all seem to attest that in this plain stood the town of Troy, which had to sustain under Agamemnon, and against the confederated Greeks, that famous war which lasted ten years, and ended (B.C. 1184) in the capture of the town and the destruction of the kingdom.

north. Its greatest breadth, taken between Tenedos and the eastern extremity of Kharos bank, is 18 miles.

There is no difficulty in working through Lemnos channel, provided there is sufficient wind to work against the current, which often runs at the rate of $1\frac{1}{2}$ knots in the vicinity of Rabbit islands, and which, near the entrance of the Dardanelles, always sets to the S.W. and W.S.W. In working through the channel with the wind from the northward, to avoid Kharos bank tack shortly before being on the line passing through cape Irene, the south-east point of Lemnos, and cape Kephalo, the eastern point of Imbros island, bearing about N.E. by E. $\frac{1}{2}$ E. and S.W. by W. $\frac{1}{2}$ W. of each other. This bank, as already stated, is easily recognised by day by the change of colour of the bottom. Southward of Kharos bank the current sets to the northward at the rate of a quarter of a mile an hour.

To avoid Shimal bank, north-west and north of Tenedos, tack before the nine mills on cape Yeni-shehr come in line with the south-east side of Mavro island, bearing N.E. by E. $\frac{1}{2}$ E. Having weathered these shoals should the wind be contrary, a vessel might run in and anchor off the coast of Anatolia, passing through the channel between Tenedos and Rabbit islands; the last-named islands may be approached within a quarter of a mile on their southern side. It is advisable to keep the north side of the channel onboard, because of the current which sets to the W.S.W. and towards Shimal rock. Great Gadaro island kept three times its length open to the eastward of Petro islet, lying off Mela point, will lead to the north-east of Shimal rock.

When abreast of Rabbit islands, avoid standing too near them, on account of the shoals to the northward and westward of them. To avoid all dangers westward of the group, tack when the east point of Tenedos bears S. by E. and is well open of Praso; this will lead west of Smith shoal, north of which the vessel may stand on until the east point of Tenedos bears S. $\frac{1}{2}$ E., the point being still open west of Praso. To avoid the shoals to the northward of Mavro, do not go south of a line intersecting a peak inland in Anatolia and a hill 230 feet high to the northward, and near the village of Yeni Kioi, bearing E. by S. $\frac{1}{2}$ S. It will be prudent, however, in consequence of the currents, the rapidity of which is very uncertain, to give a wide berth to Rabbit islands when passing to the northward of them.

Short tacks should be made north of the influence of the stream, or near the south side of Imbros island where north-easterly winds generally draw more to the northward, and where the shore is free of danger outside the distance of a mile, until the vessel on the port tack can fetch cape Helles. If the strength of the current and the lightness of the wind should render it necessary, anchorage may be obtained to the southward of Imbros within half a mile of the shore in 15 to 20 fathoms, rocky bottom.

There is good summer anchorage near cape Kephalo, the east point of Imbros, in 10 to 20 fathoms ; and there is a spring of good water close to the beach a little west of the peninsula of Kephalo.

Tenedos Channel, formed between the coast of Anatolia to the eastward and Tenedos and Rabbit islands to the westward, is generally used by vessels coming from the southward. It is 12 miles in length from north to south, and is on an average 3 miles in breadth. This breadth, however, is much reduced near Youkyeri point by Youkyeri shoals, Ocean rock, and Gadaro islands. The channel between Youkyeri shoals and Ocean rock, as before remarked, is not recommended.

Vessels from the southward in passing between Great Gadaro and Ocean rock should steer for Great Gadaro, and, after having passed to the eastward of it at a distance of 2 cables, stand on until the three mills which are to the south of the town of Tenedos are in line with the north point of Gadaro island, bearing S.W. by W. $\frac{3}{4}$ W., when a course may be shaped to pass three-quarters of a mile outside Bashika point.

The third passage, and the one most frequented, is that which is formed between Tenedos and Little Gadaro island. It is 8 cables in breadth, and has a depth of 7 to 11 fathoms, bottom mud and weeds. It is free from dangers and of easy access for any vessel. This channel serves as a roadstead for the town of Tenedos.

Gadaro islands once passed, Tenedos channel widens and is free from danger up to the Dardanelles.

In working in the bight, northward of Bashika point, a vessel should not stand nearer the coast of Anatolia than 6 fathoms ; and she should give a berth of a mile to the south-east point of Phido island, on account of Aldridge rock. To avoid the shoals to the north of Mavro, tack before the eastern point of Mavro comes in line with the west extreme of Drepano island.—(For directions to enter the Dardanelles see p. 40.)

Anchorage.—A vessel may anchor anywhere in Tenedos channel in a calm ; and no one should hesitate to anchor in mid-channel to prevent the vessel driving with the set of the current, but with a fresh wind from the north anchor in Bashika bay, or in Youkyeri bay to the southward of Youkyeri point.

Currents.—The currents, which always set to the southward, run at the rate of $1\frac{1}{2}$ or 2 knots an hour when the wind has been from the northward.

CHAPTER II.

THE DARDANELLES.

Variation in 1877 - - 6° 0' West.

GENERAL REMARKS.—The Dardanelles (ancient Hellespont), which leads from the Grecian Archipelago into the sea of Marmara, and separates Europe from Asia, is a sinuous or winding strait having a general S.W. and N.E. direction. The length of the strait from cape Helles at the south-west end to Gallipoli lighthouse at the north-east is 33 miles. Its breadth varies from 1,400 yards to 4 miles, and averages about 2 miles; its depth in mid-channel 25 to 55 fathoms. The width of the sea of Marmara at its western end for about 30 miles eastward of Gallipoli is on the average about 9 miles.*

The western entrance of the Dardanelles, 2 miles wide, is defended by two fortified castles, one on either side of the strait, namely, Koum Kaleh and Seddul Bahr, built by Mahomet the Fourth, and which will be mentioned hereafter, and near them on each side of the strait are other fortifications.

There is a marked difference in the conformation of the two shores of the Dardanelles. The coast of Asia, generally flat towards the sea, extends in the form of an amphitheatre to the foot of mount Ida. This vast plain is watered by numerous springs, and is fertile and well cultivated. Shoals, banks, and ledges, border throughout the Asiatic coast, which affords bays and roadsteads, most of which are good and easy of access.

The European side is generally high, and almost without exception steep-to. Partly from its clifly character, partly from its superior cultivation (chiefly corn), it presents an uniformly yellow and apparently arid aspect. The Asiatic, less steep and more thinly populated, affords, by its wooded hills and tree-covered plains and valleys, an agreeable relief to the yellow glare of the northern side.

We shall now proceed to describe, first, the Asiatic shore of the Dardanelles, then the European shore, and follow with remarks on the currents and general directions for making the passage through the strait.

* See Admiralty charts:—Dardanelles, No. 2429; Sea of Marmara, No. 224.

THE ASIATIC SHORE OF THE DARDANELLES.

CAPE YENI-SHEHR (the ancient Sigeum Promontory) at which the eastern or Asiatic shore of the Dardanelles commences, is in $39^{\circ} 59' 10''$ N., and $26^{\circ} 11' 20''$ E. It is distinguishable by a hill of about 230 feet in height, on the summit of which a large house is seen, and also nine mills, to the south of which is the village of Yeni-shehr. To the N.E. of the cape, and a short distance inland, two hills are conspicuous.*

Yeni-shehr bank.—Cape Yeni-shehr springs from high lands, perpendicular on the side towards the sea, but terminates on the shore by a low point of land, from which a wide and dangerous bank having one to 3 fathoms water extends half a mile from the shore, and follows the trend of the coast to the north-east as far as Koum Kaleh-si, where it extends a cable from the land.

Buoys.—Yeni-shehr bank is marked by two small buoys, namely, a red and white buoy on the south-west shoulder in $5\frac{1}{2}$ fathoms, and a red and white buoy on the north-west shoulder in $6\frac{1}{2}$ fathoms, half a mile from the shore. From the south-west buoy the northernmost of the Yeni-shehr mills bears East, and cape Helles lighthouse N. by E. $\frac{1}{2}$ E. From the N.W. buoy Koum Kaleh-si lighthouse bears E. $\frac{3}{4}$ N. and cape Helles lighthouse N. by E.

If the vessel intend taking the Asiatic side, she will, by passing close to the buoys and about 2 cables from Koum Kaleh-si point, keep out of the strength of the current. If the buoys cannot be seen, she should not pass to the eastward of the leading mark given in the chart, namely, western angle of Seddul Bahr castle in line with gateway of fort above N.N.E. $\frac{3}{4}$ E.,† until Koum Kaleh-si point bears East, when the course can be altered to the eastward.

Anchorage.—To the southward of the Yeni-shehr bank there is an anchorage much used by vessels waiting for a fair wind or for a tug. The best berth is in 12 fathoms, with the S.W. buoy of Yeni-shehr bank bearing N. by E., Cape Yeni-shehr N.E. $\frac{1}{2}$ N., and the tumulus on Demetris point S.E. by S.

From cape Yeni-shehr the coast trends to the N.E. about $1\frac{1}{2}$ miles and then juts out towards the north into a point on which is built the New Castle of Asia or Koum Kaleh-si. This is a large fortification, but in a bad state, although mounting 64 guns, some of which are of a very large calibre and throw stone shot.‡

* These hills are said to be the tombs of Achilles and Patroclus.

† See view A. on Admiralty chart, No. 1608.

‡ Koum Kaleh-si is an old stone castle originally designed for 200 guns. At present it mounts only 25, in a battery at the water line. These are partly old bronze ordnance for stone shot, and partly English 56-pounder guns. The fort is in a ruinous condition and is surrounded by a few equally ruinous houses.—[1872.]

LIGHTS.—On the north-west angle of Koum Kaleh-si are exhibited two fixed *red* lights, placed vertically 35 feet and 50 feet above the water ; visible about 5 miles. The apparatus consists of two lanterns, hoisted on a white staff.

Mendere River (ancient Simois), after rising at the foot of mount Ida, crosses the plain of Troy, and discharges itself to the eastward, almost under the walls of the castle of Koum Kaleh-si.*

Mendere Bank, a continuation of the mud bank which skirts the shore in the vicinity of Koum Kaleh-si, extends a distance of 7 cables, from the shore eastward of Koum Kaleh-si. The bank is steep-to ; its northern part is marked by a red and white buoy in 7 fathoms, $1\frac{1}{2}$ miles from Koum Kaleh-si. From the buoy Koum Kaleh-si bears W. $\frac{1}{4}$ N. cape Helles light-house N.W.

Kavanlik Liman.—Vessels frequently anchor in Kavanlik Liman, the bight between Koum Kaleh-si and the most projecting portion of Mendere bank, awaiting a fair wind. Caution is necessary, the edge of the bank being, as already remarked, steep. No vessel unacquainted with the locality should anchor in less than 14 fathoms water. The best holding ground will be found a little west of the buoy, and in a line with the buoy and Koum Kaleh-si point ; the bottom is mud and gravel. Within this line the water shoals rapidly.

From the anchorage the plain of Troy may be seen extending southward to the hills that extend from mount Ida.

AREN-KEUI (or WHITE SPOT) BAY.—The coast is low and swampy within a distance of 2 miles eastward of Koum Kaleh-si ; it then becomes steep and cliffy, which character it maintains for 7 miles, till Kephez point is approached. The summits of the hills of the coast are 600 to 700 feet high. Vessels may anchor in almost any part of this bay. Soundings of 10 or 12 fathoms will be found at $1\frac{1}{2}$ or 2 cables from the shore, and 21 to 24 fathoms over muddy bottom at 5 cables. A good berth is with the north part of Aren-keui or Ghelmez village (situated about a mile inshore), bearing S.S.E. in 16 fathoms, about 3 cables from the shore. In Aren-Keui bay avoid, as a general rule, anchoring in less than 10 fathoms, because at this limit the soundings decrease rapidly, and there might be danger of taking the ground in swinging. The roadsteads are, however, easy to recognise, when entering the strait, by the numerous vessels which will generally be seen at anchor there.

In one or two indentations of the coast landing is possible.

* This river now discharges itself at a place 400 yards to the eastward of Koum Kaleh-si. The mud brought down by this and other rivers must have greatly changed the coast line since the days of the siege of Troy ; and at this part, the beach on which the Greeks are supposed to have hauled up their ships is now probably some distance inland.—Commander W. J. L. Wharton, H.M.S. *Shearwater*, 1872.

White Cliffs (or Aspra Homata) Pratique Post is situated $2\frac{1}{2}$ miles to the southward of Kephez point, near some conspicuous white cliffs. There is anchorage in 12 fathoms, abreast the White Cliffs, at 3 or 4 cables from the shore, with the village of Kouz-keui bearing S.E. by E. $\frac{1}{2}$ E.

A short distance to the north of the White Cliffs, the hills again dip to valley at the back of Kephez point.

KEPHEZ (or Barbers) POINT.—Kephez point is low, flat, and distinguished by its white appearance, by its battery of 18 pieces of cannon to the northward on its highest part, and by an old fort in ruins (1853) on the southern part.

LIGHT.—On the southern extremity of Kephez point is a white lighthouse 55 feet high, which exhibits a *revolving red light every half minute*, visible 12 miles.

A bank, composed of mud and sand, extends along shore a mile to the south of Kephez point. This bank is a continuation of the shoal ground which skirts Aren-keui bay; there is not more than 10 feet water on the bank, and there are besides, but close to the shore, two small rocks awash.

Buoy.—The south elbow of the shoal ground which skirts Kephez shoal is marked by a red and white buoy lying in 6 fathoms 4 cables S.W. by W. $\frac{1}{2}$ W. from Kephez lighthouse.

Anchorage.—There is anchorage just to the southward of this buoy in the bight named Kephez bay, which will accommodate a number of vessels.

Current.—In Aren-keui bay, in a zone of a mile parallel to the shore, slight eddies are met with, which favour navigation and assist vessels in working up the strait to Kephez point. The inshore limit of the prevailing current is shown by a line on the chart.

CAUTION.—Great caution is required when closely skirting Kephez shoal in order to avoid the strength of the current. The shoal is curved, and the buoy is placed slightly to the northward of its actual extremity, so that a vessel passing round very closely runs a great chance of striking. Vessels are frequently stranded here.

Ancient Dardanus.—On a low hill at the back of Kephez point stand the foundations of what is supposed to be the town of Dardanus, a city older than Troy itself, and which gives its name to the modern title of the strait, the Dardanelles.

SARI SIGLAR or Chanak Kaleh-si bay.—From Kephez point the coast trends a mile to the east, and then juts out suddenly to the north $2\frac{1}{2}$ miles to a point similar in formation to Kephez point, and on which stands the old Castle of Asia or Chanak Kaleh-si. A bay is thus formed, which is 3 miles in length from point to point, a mile across, and is skirted with banks of sand and mud, which have less than 3 fathoms water on them, and which extend 3 to 7 cables from the shore. At the northern part of

the bay, the bank extends 4 cables from the shore, has less water, and is steeper.*

To clear the shoals in Sari Siglar bay, a vessel after passing Kephez point, should not bring Kephez lighthouse to bear to the westward of S.W. until the fountain near the beach in the bottom of the bay bears East. She may then steer in a little to the northward of the fountain to the anchorage.

Anchorage.—Vessels anchor in Sari Siglar bay in 10 to 13 fathoms water, muddy bottom, at three quarters of a mile from the shore, and $1\frac{1}{2}$ miles to the southward of Chanak Kaleh-si. The best anchorage in the bay is in the centre, in 10 fathoms, with the centre of the keep of the castle of Chanak Kaleh-si bearing N. by E. $\frac{1}{4}$ E., and a fountain near the beach in the bottom of the bay S.E. Sari Siglar bay is the best anchorage in the Dardanelles.†

Water.—Good water may be found at the fountain, but it is not a convenient watering-place on account of the difficulty of approach in boats.

A mile south of Chanak Kaleh-si is a small earthwork battery. In 1872 this battery was not armed.

The north point of Sari Siglar bay, on which stands Chanak Kaleh-si, is low and projects a little to the westward towards the coast of Europe, from which it is distant 7 cables. The point is free from danger; at the distance of a cable from it the depth is 18 fathoms, this is the narrowest part of the Dardanelles; the depth is about 50 fathoms, sand, stones, and shells, and the deep water is close to either side. The prevailing southerly current runs with great velocity, leaving no slack or eddy near the shores, thus making Chanak Kaleh-si the most difficult part of the strait to pass.

CHANAK KALEH-SI.—The fortifications which are on this point appear formidable. The castle of Chanak Kaleh-si, which in 1853 had been recently repaired, had 171 embrasures and 102 pieces of cannon, of which 4, placed level with the ground, threw marble shot 2 feet in diameter and 150 pounds weight. Besides these, the Turks had constructed to the north and south of the castle two batteries nearly level with the water, of 36 and of 44 guns.‡ A strong garrison, consisting chiefly of artillerymen,

* See plan of the Narrows on Admiralty chart, No. 2429.

† The British fleet on its way to the Bosphorus in the autumn of 1853 remained at anchor in this bay.

‡ Chanak Kaleh-si is a massive quadrangular stone fort, having a keep in the centre, and built on the shore of the strait, with Rhodius river washing its south wall. It once mounted a number of guns, but in 1872 only 31 were in position, all placed in a comparatively new battery of earth and stone, at a level with the water, facing the strait. There are four of the celebrated high old bronze ordnance here, throwing stone shot of from 20 to 25 inches in diameter. The other guns are English 56-pounders.—[1872.]

was established here, and barracked in the castle, which was commanded by a Pasha, whose authority extended likewise to the Old Castle of Europe, or Kilid Bahr,* and to all the forts on both sides of the Dardanelles.

LIGHTS.—From a mast in the low battery west of the town are exhibited two fixed *red* lights placed vertically, 59 feet and 46 feet high respectively, visible about 4 miles.

Rhodius River runs to the south of the point, and under the walls of the castle. It discharges itself into the north part of Sari Siglar bay, and carries with it, in the winter time, a great quantity of sand and mud, which give a yellowish colour to all that part of the channel. The river is crossed by a large wooden bridge, which is seen from the strait; it is nearly dry in summer, but in winter is a torrent.

The town, called by the Turks in ordinary conversation Chanak Kaleh-si, and official correspondence Sultanieh, is known by Europeans as Dardanelles. It consists of about 1,500 houses, and is probably the cleanest town in Turkey. The land at the back of the town forms the plain of Rhodius river; but at a distance of 3 miles in the interior picturesque hills rise on either side of the river to a height of 1,500 feet, Chanak (the Turkish word for pottery) is the most important place in the Dardanelles, and is the seat of Government of the Valyat of the Archipelago. There are manufactories of earthenware and gilt pottery, which though coarse have a great reputation in the Levant. The houses of the consuls border the waters of the bay north of Chanak.

Telegraph.—There is telegraphic communication with nearly all parts of the world, through Constantinople.

Tugs.—Chanak is the head quarters of the tugs which lie in Dardan bay. Masters of vessels are advised to get the assistance of their consul in concluding a bargain for towage, for there is no fixed tariff, and the prices sometimes paid are enormous.

The tugs usually tow two or three vessels at a time. Many vessels are only towed through the Narrows as far as Ak Bashi bay, and thence get up through the strait under sail.

Supplies.—Supplies and stores can be obtained at Chanak, but in small quantities and at high prices. Divers using the latest diving apparatus and capable of effecting temporary repairs to a ship's bottom are to be found here. There are a few shipwrights in the town, but no appliances for effecting repairs. Steam vessels requiring coal may obtain 30 or 40 tons at Chanak.

* The fortress of Chanak Kaleh-si, from which the town takes its name, was, with the opposite castle of Kilid Bahr, the first defensive work raised here in 1470 by Mahomed the Second, and these two are called the Old Castles of Europe and Asia.

Pilots.—For Constantinople, the Black sea, sea of Marmara, Enos or the Archipelago, may be obtained at Chanak. See remarks at page 107.

Pilots for the Danube may also be obtained at Chanak. A bargain must also be concluded with them; there is no fixed price, but the charge is usually from 16*l.* to 20*l.*

Mail Steam Vessels.—The steam vessels of the Messageries Maritimes, and those of the Austrian Lloyd, called at Chanak on their way to and from Constantinople once a week.

DARDAN BAY.—To the north of Chanak point the coast curves and forms a bay which is a mile across from north to south, and a third of a mile deep. Dardan bay, however, is not a good anchorage, for its shore is bordered by a hard bank of gravel, sand, and rock, having a depth of 9 to 18 feet, and which extend 2 cables from the shore. Outside the bank the water deepens suddenly to 20 fathoms. The current sets strongly to the south-west in the middle and along the south shore of the bay abreast the town of Chanak Kaleh-si, but along the east and north shores it almost always runs to the northward; and as vessels must necessarily anchor near the line of separation between the two currents, she will be alternately in either current. Small vessels use the anchorage, also the tugs which lie in the shoal water.

Submarine Telegraph.—Vessels are cautioned not to anchor in the vicinity of the submarine telegraph cable which passes from the north angle of Chanak Kaleh-si to the north angle of Kilid Bahr.

The best berth in Dardan bay for a large vessel is in the north part in 18 fathoms, mud, with the west end of the Medjidieh battery bearing N. $\frac{1}{2}$ E. and the barracks in the depth of the bay, East. The shoal in the north part of the bay is almost awash and extends a cable from the shore.

From Medjidieh battery there is good anchorage along shore as far as Nagara point in 10 to 16 fathoms, and from 2 to 4 cables from the land.

In Dardan bay all vessels-of-war must stop and show their firman for passage before they are allowed to proceed through the strait; and though merchant vessels are no longer under this restriction, it is one of the places where vessels can get the necessary visé to their bills of health in order to receive pratique at Constantinople.

Buoys.—The south edge of the bank in Dardan bay is marked by two buoys, with staves carrying small boards on which is written, in Italian and Turkish, the depth of water, namely, 20 feet. There are several mooring buoys in the bay, for the convenience of mail vessels.

Water.—Water may be obtained at a fountain close to the Pacha's residence.

Medjidieh Battery.—At the north side of Dardan bay low hills again close on the coast line. Under these, and on the north point of the bay,

stands the battery of the Medjidieh. This is a modern earthwork that will mount *en barbette* 23 guns. There are at present only 12, all modern cannon, one of them a 9-ton rifled piece.

Keoseh Kaleh.—A small low flat point projects slightly at three-quarters of a mile to the northward of the Medjidieh, and on this is built Keoseh Kaleh, an old stone fort originally armed with 44 guns, but which in 1872 mounted 17 smooth-bore guns in embrasures.

NAGARA BAY may be said to commence to the north of Keoseh Kaleh. There is a good anchorage in 10 to 16 fathoms at 2 to 4 cables from the shore in any part of the bay, well protected from north-east winds, and out of the current. The best berth is north of the landing place called the Tekeh. All Nagara bay is in the eddy current which runs to the northward and the strength of which depends upon the strength of the main current.

Any smart vessel might work from Dardan bay to either of the anchorages in three hours with a fresh breeze from the N.E., taking care not to keep too far out in the strength of the current.

NAGARA POINT is a long low sandy spit which projects to the westward from the coast hills a distance of 1,600 yards. It is distinguished by a large white square fort, Nagara Kaleh-si, mounting 84 guns, at the north-west angle of which there is a mosque, also white, frequently mistaken for a lighthouse. This fort is built on the site of the ancient castle of Abydos,* and completes, with the castle and batteries already described, the fortifications of the Dardanelles on the Asiatic coast.†

LIGHT.—A red light *flashing every 10 seconds*, and visible 10 miles, is exhibited from a white lighthouse, 49 feet above the sea, placed at the west angle of the keep of Nagara Kaleh-si; the lighthouse is not conspicuous in the daytime as it is only a few feet above the parapet. A white minaret, a few yards to the east of the keep, is more readily distinguished.

Nagara Spit.—The extremity of Nagara point is a sharp-pointed bank of sand that runs out to the westward, shelving gradually under water to a distance of 2 cables from the parapet of the fort, where it drops to 4 fathoms. Outside this the water gradually deepens to 6 fathoms at 4 cables

* Near this site Xerxes threw across to Europe a bridge of boats, which must have been a mile and a quarter in length. The ancient town of Abydos was probably on the hill of which Nagara point is the prolongation, and on the site where the ruins of a girdle wall are still seen.

† Nagara Kaleh-si is an old stone fortification with a keep in good preservation. It mounts in its lower battery 45 guns, and on the top 7 guns, all old, and none of more than 8 inches in calibre. Adjoining the fort is a new earthwork for 12 guns, but with only 5 mounted. This is the most eastern fort on the Asiatic side of the Dardanelles.—[1872.]

from the fort. The extremity of the spit is marked by a conical red buoy with staff and ball, with the centre of Nagara keep bearing E. $\frac{3}{4}$ S. and the centre of Bokali fort N. by W. The bank appears to extend much farther from the shore, but its appearance is simply due to discoloured water running along the coast, and round the spit.

The current, the direction of which is here W.S.W., runs strongly over the end of the bank and past the buoy. Vessels should not attempt to pass inside the buoy as but little water is there.

Firman Vessel.—The Firman vessel is moored a mile below Nagara point, where every ship on her return voyage is bound to stop and deliver her bills of health, &c. The vessel is painted yellow, with one mast from which is exhibited at night, one red light over two white lights, placed triangularly.

Vessels with foul bills of health must remain in Nagara bay and perform quarantine before passing on to Constantinople. In Nagara bay eastward of the fort is the lazaretto, a large yellow house.

ABYDOS POINT.—From Nagara point the coast trends E. by N. a little more than half-a-mile, at which part the line of grass-covered low coast hills from Dardan bay extend to the shore and form Abydos point, which is a steep looking cape, about 100 feet high, and shows green or yellow according to the season. It is not steep-to, but the bank of rock and sand extends only a cable from the shore, when it deepens suddenly to 13 fathoms. Three quarters of a mile short of the point, on this range, is an old redoubt, that stands up very prominently over Nagara bay.

From Abydos point the coast runs in an easterly direction for 3 miles, and then curves round to the N.E. for 6 miles to Kodjouk Burnu, the shore being indented by small shallow bays and skirted by a bank of sand and mud, extending in some places to the distance of half a mile.

This bay is well sheltered from all southerly winds, but a vessel could only lie here in fine weather if the wind blew from the N.E. On all this part of coast an eddy exists which, though weak, is made use of by sailing-vessels.

Abydos bank, of 16 feet, about half a mile in extent, lies half a mile east of Abydos point, and about $4\frac{1}{2}$ cables from the nearest part of the shore. The summit of Maitos hill kept a little open of Abydos point, W. $\frac{1}{4}$ S., leads in 4 fathoms clear of Abydos and Ay' Iani banks.† Between Abydos and Ay' Iani banks a depth of 5 fathoms will be found at $1\frac{1}{2}$ cables from the shore.

Ay' Iani or Towshan Point is low, rocky, and, white; and is composed of a conglomerate of oyster shells.

* See view D. on Admiralty chart, No. 2429.

Bes Chamlik or Seven Firs.—At the back of Ay' Iani point and one mile inland stands a conspicuous clump of seven fir trees known by the Turks as Bes Chamlik.

AY' IANI BANK.—From Ay' Iani point, the coast bank of that name extends N.E. about $4\frac{1}{2}$ cables at which spot there is a depth of 8 feet; the edge of the bank then turns to the eastward, and half a mile further on approaches the shore to within 2 cables. The general depth on the bank is 2 fathoms.

Buoy.—The shoal patch of 8 feet is marked by a red and white buoy, moored in 5 fathoms, immediately outside the patch. From the buoy Abydos point bears West 2 miles.

The Coast.—Kair Burnu is very much like Ay' Iani point, low and formed of white rock. From it the land again sweeps round to the S.E. and N.E., forming a shallow bay to the point where Moussa-Keui river falls into the sea. Thence the coast extends with little deviation to Saltik Liman Burnu, $2\frac{1}{2}$ miles to the N.E.

MOUSSA BANK, a projection of the coast bank, lies off the mouth of Moussa Keui Tchai (or river), a depth of 3 fathoms being found at $3\frac{1}{2}$ cables from the shore. Yapildak river, half a mile to the eastward of Moussa Keui Tchai, may be known by a flat piece of land immediately to the N.E. of the river. Both these rivers, though not absolutely dry, cease running in the summer, and, except in time of floods, are never more than small streams. The Moussa Keui Tchai was anciently known as the Practicus.

Buoy.—The extremity of Moussa bank is marked by a red and white buoy in $4\frac{1}{4}$ fathoms. From the buoy, Sestos castle bears W. by N.; Abydos point W. by S.; Bes Chamlik (Seven Firs) S.W. by W.; the summit of Bakajak N.W. $\frac{1}{4}$ W.

Should the buoy not be seen, Bes Chamlik in line with Kair Burnu point S.W. $\frac{3}{4}$ W. will lead to the north of Moussa bank in 15 fathoms. Yapildak Tépé, a conical tree-covered hill, bearing S.E. $\frac{1}{4}$ E. will lead to the eastward of the same in 5 fathoms.*

Anchorage.—After passing Moussa bank a vessel can approach the shore within a cable as far as Saltik Liman Burnu. There is excellent anchorage all along this shore, especially in the bight between the Moussa and Ay' Iani shoals, in 12 fathoms, mud; and vessels working up are recommended to anchor on this side of the strait in preference to the other, as the water is shoaler, and the eddy favourable.

Aspect.—All the shore from Ay' Iani to Yapildak Tchai is low, and in many places, swampy in winter. Behind this plan, however, the hills rise gradually, till, at a distance of 9 miles inland, they culminate in the fine pyramidal peak of Aghi Dag, 3,010 feet above the sea. This part of the

* See view C. on Admiralty chart, No. 2429.

country is poorly cultivated, but several villages are scattered throughout it, the whole presenting to the eye an agreeable picture, large numbers of trees covering the valleys and slopes.

The villages seen from the strait are: Kemel, high up the hills behind Ay' Iani, and just under a large dark quadrangular plantation; Okjolar, a small village farther to the north-east; Kezil Ketchili, a little below the last; and, Yapildak, of which only a minaret and a few houses are visible from the sea, over the trees of Yapildak Tépé. None of these villages are conspicuous, except in certain lights, when the white minarets and mills shine out brightly.

BERGAZ ISKALESSI.—Saltik Liman Burnu, a conspicuous headland of white rock 70 feet high, forms the south termination of Bergaz Iskalessi, a bay 7 cables across, and open to the north-west, and is the only rocky point in the neighbourhood for some miles; the north point of the bay is low and sandy. A conspicuous knot of trees, named Bergaz Clump, is situated on the north-east summit of some hills $1\frac{1}{2}$ miles inland, and when bearing S.E. $\frac{3}{4}$ S., leads into Bergaz Iskalessi, but the trees disappear when the vessel is close inshore, the coast range hiding them. Bergaz Iskalessi is the place of embarkation for the produce of the rich valley of Bergaz, and the district connected with it. A few fishermen's huts are situated at the bottom of the bay.

Anchorage.—Ships anchoring in Bergaz Iskalessi must be careful not to run too far into the bay, as the 3-fathom line of soundings extends a distance of $2\frac{1}{2}$ cables, and then quickly deepens to 7 fathoms. The best anchorage is in 14 fathoms, mud, with the lighthouse on Kodjouk Burnu showing just outside of the north point of Bergaz Iskalessi.

False Bay.—To the N.E. of Bergaz Iskalessi another small bay is formed, filled by a sand bank, with only $1\frac{1}{2}$ fathoms at its edge, which projects a cable outside the bay. The shore is low and sandy. Many vessels ground in this bay.

Bergaz Asmak River.—The bank in False bay has been formed by the débris brought down by the Bergaz Asmak, which runs into the bottom of False bay, and is in summer a lagoon, but in winter the river is fed by the water from Kangarli hills.

Bergaz Village is comparatively large, exhibiting three minarets, and is situated 3 miles from the coast on the hills facing the strait; the village is visible from a vessel in the channel. On the hills bordering the plain of Bergaz are also the hamlets of Kangarli, Giok Keui, and Sandal Ovasi, but none of them are visible from the strait. Over the hills is again seen the summit of the mountain Aghi Dag.

KODJOUK BURNU is a low flat rounded point, and from a distance appears to project much farther into the strait than it actually does; the lighthouse, which stands on the extremity of the point, appears also to rise

from the water itself. The point is nearly steep-to, the shoal water not extending more than half a cable from the shore. The land of which Kodjouk Burnu is a part, is the end of the large valley and plain of Bergaz Ovasi, which extends from the shore in a south-easterly direction. The mouth of the river Bergaz Tchai is situated a mile to the N.E. of the lighthouse; this river is never entirely dry.

The strait is narrowed to $1\frac{1}{2}$ miles at Kodjouk Burnu.

LIGHT.—Bergaz lighthouse, situated at Kodjouk Burnu, is a small, square, white house, with a staff rising from the centre, on which are hoisted two vertical *red* lights visible 8 miles.

BERGAZ (or Fisherman) BANK.—Beyond the lighthouse the shore of Kodjouk Burnu, or point, gradually curves round to the east, and then sweeps in to the E.S.E. forming a bay of some depth. At the point where this bay commences, Bergaz Tchai river falls into the strait, and has deposited opposite to its mouth a bank which fills all the bay. The 3-fathoms line of soundings is 4 cables from the shore, but the 5-fathoms line extends 7 cables, and the portion of the bank between these depths makes a good stopping place for a night; the holding ground is good.

Buoy.—Bergaz bank is marked by a red and white buoy, lying on the centre of the outer part of the shoal in 4 fathoms, with Bergaz lighthouse bearing W.S.W. $1\frac{1}{2}$ miles; Galata light N. by W. $1\frac{1}{2}$ miles. Vessels can pass inside this buoy in working up, but it is not recommended for a stranger to do so.

The Coast, from the mouth of river Bergaz Tchai trends E.S.E. for three quarters of a mile, and then N.E. for $5\frac{1}{2}$ miles, with none but small indentations as far as Lampsaki. All the shore line is low, and composed of either sand or shingle, but from the bottom of the bay above the river, eastward, the land rises at once and thence gradually to the summit of the range, 3 miles inland, where the hills are 1,230 feet above the water. The background is one monotonous, uniform slope, with no cultivation, house, or feature of any kind to relieve it. It is covered with short scrubby brushwood, and is called Lesskeui Tépesi.

LAMPSAKI LIMAN is formed chiefly by the curve of the land out to the north. It is one mile across from the low point on the south-west which juts very slightly into the strait, and on which stand five windmills in a row, Tchardak Ova, the northern point of the bay, is also low, and is the extremity of a flat rounded plain, projecting from the foot of the hills behind.

Anchorage.—Good anchorage may be obtained in Lampsaki bay with protection from N.E. winds, but there is a bank with a steep outer edge extending into the bay to a distance of $2\frac{3}{4}$ cables, which necessitates caution in anchoring.

The best berth is in 19 fathoms 4 cables S.W. by S. of Tchardak Ova with the outer mill of Lampsaki bearing S. $\frac{1}{4}$ W. and a large rounded tree at the bottom of the bay E. by S. In this position vessels are well protected from the swell from the sea of Marmara, and in the north-east part of the bay the shore is steep-to.

In this anchorage slack water, or an eddy current, never very strong, will be found.

Lampsaki Town.—On the south shore of the bay is Lampsaki, a small town possessing a conspicuous mosque and minaret, and surrounded by trees. The town is prettily situated on a slightly rising slope at the northern entrance of the valley of Koush Ovasi, down which the river Lampsaki Tchai runs, and falls into the sea 500 yards to the south-west of Lampsaki point. The population of Lampsaki in 1872 was 1,400.

Lampsaki is unhealthy, probably from the swampy nature of the land at the mouth of the river, combined with the bad quality of the water, which is said to produce fever. The water is brought from the hills by pipes, and supplies the fountains in the town, whence it is obtained in casks.

Supplies.—Lampsaki exports a great deal of vegetable produce, besides cattle, sheep, and wine for Constantinople.

Pratique.—Lampsaki is one of the ports where pratique can be obtained for Constantinople. The pratique office is situated on a small pier in the bay.

Tchardak Bank.—From Tchardak Ova the coast takes an E.N.E. direction for $1\frac{1}{2}$ miles to the mouth of Tchardak Lagoon. The bordering bank extends from Tchardak Ova point, a distance of 2 cables; it then follows the direction of the coast at a distance of 3 cables to Tchardak lagoon.

Buoy.—A red and white buoy is placed off the extremity of the bank near Tchardak Ova in 6 fathoms. Close inside of the buoy is a depth of 2 fathoms, and as the edge of the bank is round and broad, it must not be passed too closely.

TCHARDAK LIMAN.—To the N.E. of Tchardak Ova is another bay, formed by the abrupt projection of Tchardak spit to the N.W. The entrance to Tchardak Lagoon is at the north-east part of the bay; and the bay itself, though bordered for 3 cables by the shoal bank above mentioned, forms another good night anchorage for a vessel about to work through Gallipoli strait.

The Village of Tchardak, containing 1,200 inhabitants, is pleasantly situated on the plain bordering the sea at this part, with the hills of Kaleh Bair rising behind to a height of 830 feet. This plain is much cultivated.

Anchorage.—A vessel may anchor at $1\frac{1}{2}$ cables from Tchardak point

in 14 fathoms, with Tchardak Burnu lighthouse bearing N.N.E. $\frac{1}{2}$ E., and the domed mosque in the village of Tchardak E.S.E.

LIGHT.—At the extremity of Tchardak spit stands a lighthouse, a small white square building with staff on which are hoisted two *red* lights placed vertically, 39 feet and 49 feet above the sea, and visible 5 miles.

TCHARDAK SPIT and LAGOON.—Tchardak lagoon is formed by a narrow strip of sand extending from Tchardak spit E. by N. $1\frac{3}{4}$ miles, and joining the coast. The breadth of the lagoon at the entrance is 250 yards, widening inside to $3\frac{1}{2}$ cables. Tchardak spit is steep on its south-west side.

The depth of water at the entrance of the lagoon is 11 feet, shoaling to 8 feet a cable further in; the remainder of the lagoon is very shallow, and abounds with ducks during the winter.

This lagoon is supposed to have been the port of the ancient Lampsacus, but at the present day it is too shallow to be of use except to the small coasters who use it as a careening place. There is a small wooden pier just at the entrance of the lagoon.

A patch of 18 feet lies N. by E. $\frac{3}{4}$ E. $4\frac{1}{2}$ cables from Tchardak Burnu lighthouse, and is connected with Zindjer Bozan bank by a shoal of 24 feet. Patches of 24 feet and 27 feet lie 2 cables to the south-west of the 18-foot patch.

Buoy.—The 18-foot patch is marked near its western edge by a red and white buoy, moored in $8\frac{1}{2}$ fathoms with Tchardak Burnu lighthouse bearing S. by W., Gallipoli lighthouse N.W. $\frac{1}{2}$ W., the ruined lighthouse of Fanous, E. $\frac{1}{2}$ N., and the north buoy of Zindjer Bozan bank N.E. by E. $\frac{1}{4}$ E., $2\frac{1}{4}$ miles.

GALLIPOLI STRAIT, the north-east entrance of the Dardanelles, is nearly 2 miles wide at Tchardak. On the opposite side of the strait is the town of Gallipoli.

Zindjer Bozan Bank.—The edge of this bank extends from the shore near Tchardak Burnu lighthouse in a N.E. by E. direction for 3 miles; it then turns to the E.S.E., and trends in again to the shore a mile beyond Fanous hill. The edge of the bank at its northern extremity is one mile from the shore. A depth of 2 to 4 fathoms will be found on the bank, but the bottom is uneven.

The outer edge of the west part of Zindjer Bozan bank is everywhere steep. On the outer edge of the north part there are several small 3-fathoms heads, outside of which the water deepens suddenly from 5 fathoms. At this part the 3-fathoms line of soundings is only 4 cables from the shore.

The north-eastern side of the bank has no shoal heads on it. To the

eastward of the north shoals a vessel can approach to within half a mile of the bank.

Buoys.—Zindjer Bozan bank is marked by two buoys, both red and white. The south-western one already mentioned lies just outside the 18 feet patch off Tchardak lighthouse. The north buoy lies in $7\frac{1}{2}$ fathoms; a few yards to the north of the northern 18-feet patches. From this buoy Gallipoli lighthouse bears W. $\frac{1}{2}$ S.; Tchardak Burnu lighthouse S.W. $\frac{1}{2}$ W. 3 miles; Fanous lighthouse S.S.E. $\frac{1}{2}$ E. one mile.

DIRECTIONS.—Gallipoli lighthouse in line with the centre of the remarkable cliffs near the summit of the rounded Ak Yarlar mountain, bearing W. $\frac{1}{2}$ S., leads in 12 fathoms to the north of Zindjer Bozan bank, but very close to; care must be taken not to bring the lighthouse to the right or north of the centre of these cliffs.* This mark is easily distinguished; the lighthouse is white, and the cliffs generally show white also; after rain they will however appear of a reddish yellow, and are not so conspicuous.

Tchardak lighthouse in line with the centre of Dérédibi, a low rounded hill near Saltik Liman Burnu, bearing S.W. $\frac{1}{4}$ W., will lead clear of the north-west edge of Zindjer Bozan.† This will form a good clearing mark for a vessel when near the centre of the shoal.

A vessel working to the eastward must be careful not to pass south of the clearing mark for the north part of the shoal, until she brings the highest part of some white cliffs in line with the summit of Codja Flamour hill; this hill is easily distinguished by an enormous tree, towering above the other foliage on the hill, and looking like a large stone, and when the tree bears S.E. $\frac{3}{4}$ S. a vessel can stand in to half a mile of the shore.

FANOUS HILL.—The coast line inside Zindjer Bozan bank is low. Tchardak spit extends N.E. by E. $1\frac{3}{4}$ miles, and the shore then turns gradually round to the east, where there are some low cliffs, and a small isolated hill 120 feet high, presenting a cliff on its sea face, and named Fanous hill; on the hill stands the ruins of an old lighthouse tower, long since abandoned.

EUROPEAN SHORE OF THE DARDANELLES.

The European side of the Dardanelles is the ancient Chersonese of Thrace. It commences at cape Helles, or, as it is named by the Turks, cape Grecco, a high headland, $1\frac{1}{2}$ miles in breadth projecting to the south-west, and formed by three steep points of a white colour; the westernmost, cape Tekeh, is the ancient Mastusium Promontory; on the

* See view F. on Admiralty chart, No. 2429.

† See view G. on Admiralty chart, No. 2429.

second point, cape Helles, stand some ruins and a tomb said to be that of Protesilas; and on the third, or cape Greco, is built the castle of Seddul-Bahr, which, with that of Koum Kaleh, defends the entrance of the straits. The cape, though steep, is fronted by a flat of rock and sand, which extends seaward about $1\frac{1}{2}$ cables from capes Tekeh and Helles.

LIGHT.—On cape Helles stands a white stone lighthouse, 33 feet high, which exhibits at an elevation of 98 feet above the sea, a *revolving* white light *every minute*, visible in clear weather from a distance of 18 miles.

Vessels sometimes anchor between cape Helles and Seddul-Bahr, to await a fair wind, but it is bad anchorage. The best berth is in 7 fathoms sand, at 4 cables from the shore, with the south point of the castle bearing E. by N., and the fort on the height N.E. $\frac{1}{2}$ E.

The castle of Seddul-Bahr (Barrier of the Sea) is a quadrangular enclosure with solid walls, having low towers at the angles; it stands on the side of the hill which slopes to cape Greco, and with its lower wall on the waters' edge. It is armed with 63 guns, two of which throw large stone shot.* On the height behind the castle a fort has been constructed named Shahim-Kalehsi, and which in 1853 mounted 15 guns.

LIGHT.—On one of the lower ramparts of Seddul Bahr stands a mast, on which are hoisted two vertical *green* lights, 52 feet above the sea, visible 5 miles.

Pratique Post.—A small town, also named Seddul Bahr, stands on the hill beyond the castle of that name. This is one of the pratique posts for Constantinople, and is a very convenient one, as a vessel can heave to, out of the current, under the lee of the cape, while her boat communicates.

Aqueduct.—To the north-east of Seddul Bahr, about a third of a mile from the shore, are five hydrants having the appearance of square pillars.

MORTO BAY.—At $1\frac{1}{2}$ miles east of Seddul Bahr another bold, steep white point, named Eski-Hisarlik, is seen, surmounted by a battery known as De Tott's battery, formerly of 12 guns, but which is now in ruins and has no guns mounted. Morto bay, formed between Seddul Bahr and Eski-Hisarlik, is about half a mile deep, and has a low sandy shore, except near its east end: it is almost filled by a shoal bank of sand and rock, that curving round Seddul Bahr at a cable distant extends off the shore farther east to a distance of half a mile, when it turns in to the head of the bay;

* The interior of Seddul Bahr, the largest fortress (in acreage) in the Dardanelles, is now a mass of ruins. The only guns mounted are in the lower battery in covered embrasures: these are 25 in number, English 56-pounders and smaller old Turkish guns.—[1872.]

the eastern side of the bay is similarly choked. In the centre of the bay there is a narrow opening in the shoal bank, which affords indifferent anchorage. The current runs across the mouth of the bay with great velocity.

Buoy.—The extremity of the bank off Seddul Bahr on the port hand entering Morto bay, is marked by a red buoy in 6 fathoms, with 3 fathoms close inside it. From the buoy Seddul Bahr light bears W. $\frac{1}{2}$ S. three-quarters of a mile, and the western hydrant, inland at the head of the bay, N. by W. $\frac{3}{4}$ W. three-quarters of a mile.

Anchorage.—To steer into Morto bay, bring the western hydrant to bear N.W. by N., and steer for it, till about $1\frac{1}{2}$ cables past the buoy, then anchor in 14 fathoms at about half a mile W. by N. from Essi-Hisarlik point.

Morto bay will be found a convenient anchorage for steam-vessels entering the strait just before sunset.

From Eski-Hisarlik point to Kilid Bahr, a distance of 10 miles, the coast trends N.E. by E.; it is everywhere steep and barren, with a depth of 10 to 13 fathoms within a short distance of the shore.

Souan Dereh.—There is anchorage in this creek at 2 cables from the shore, in from 10 to 13 fathoms.

Avouzlar.—There is anchorage off the small valley of Avouzlar, 2 miles west of Kilid Bahr, but it is not recommended except in cases of necessity.*

Water.—A good supply of excellent water may be obtained with facility from a fountain about half a mile N.E. of Avouzlar.

Vessels may also anchor three-quarters of a mile to the westward of Kilid Bahr, in 6 to 8 fathoms. The two last-mentioned anchorages are easily recognised by the many vessels which are seen there, but it must be borne in mind that a vessel should anchor at not more than 2 cables from the shore, for if farther off she would be in from 24 to 27 fathoms.

Water might be easily obtained at these anchorages from the fountains on the coast, but if fresh provisions were wanted, they must be brought from Chanak Kalehsi, on the other side of the strait, from which it is only three-quarters of a mile distant.

KILID BAHR.—The castle of Kilid Bahr (Key of Sea, or Old Castle of Europe, standing on a rounded point, which stretches to the eastward, was built by Mahomet the Second. It was afterwards repaired and arranged to receive 64 pieces of cannon of large calibre, 38 of which were

* See plan of the Narrows on Admiralty chart, No. 2429; scale, $m=2\frac{1}{2}$ inches.

placed in the battery; and there were besides bedded on the ground 16 large pieces, which throw stone shot weighing upwards of 150 lbs.*

Namazieh battery.—To the southward of Kilid Bahr, at a short distance, a low battery, in the form of a crescent, named Namazieh, was built a few years ago, and in 1853 was armed with 46 guns.†

LIGHT.—On the outer part of the parapet of Namazieh battery is a white staff, on which are hoisted two vertical *green* lights, 20 feet and 49 feet respectively above the sea; they are visible 4 miles.

The town of Kilid Bahr, which is of slight importance, stands on the side of the hills, which here rise to a height of 650 feet above the water. Its houses are of wood, surrounded by a great number of cypress trees. Its population is scanty and composed of only the garrison of the fort, and offers no resources to vessels which put in for shelter.

It has been already stated that the narrowest part of the strait is between Kilid Bahr and Chanak, between which the current sometimes runs at the rate of 4 knots, and it is only with a fair wind that a vessel can make any headway. It is in this part of the strait that the Turks have concentrated their defensive force, and it is therefore in passing between these two castles that all vessels are obliged to show their firman or permission to go to Constantinople.

Bank.—Namazieh point itself is free from danger, but nearly joining it to the southward is a sand and rock bank of 2 fathoms, $1\frac{1}{2}$ miles long, and extending a cable from the land. The edge of the bank is steep-to.

The Coast.—Beyond Namazieh the coast trends N.N.W. for 3 miles to the town of Maitos. This part of the coast is free from danger and steep-to, except at one spot between Dermaburnu and Cham Kaleh-si, where a bank 2 cables long extends one cable from the coast. Between Namazieh and Cham Kaleh-si the land rises abruptly from the water, but from the latter place to Maitos a plain with hills behind borders the sea. There is no anchorage to be found on this part of the coast; the current sets strongly on shore, and thence towards the Asiatic shore.

Dermaburnu Battery is a small modern earthwork, mounting 11 small

* Kilid Bahr is a picturesque stone fortress, of a heart or trefoil shape in plan, with a tall keep rising in its centre, of a similar shape, and stands on sloping ground on the edge of the strait. The only guns now mounted are in a stone and earthen battery under the keep, where eight enormous bronze guns of ancient date are placed. Two of these throw stone shot of 29 inches diameter, the calibres of the others vary from 25 to 20 inches. Close to the castle is the Cynossema or Tumulus of Hecuba.—Commander W. J. L. Wharton, H.M.S. *Shearwater*, 1872.

† Namezieh battery, which adjoins Kilid Bahr to the southward, is a modern work of earth, in course of construction, with 11 modern guns mounted *en barbette*. The guns are 68- and 56-pounders, with one rifled 12-ton gun.—[1872.]

guns, standing at the water's edge, three-quarters of a mile beyond Kilid Bahr.

Cham Kaleh-si, one mile to the N.N.W. of Dermaburnu battery, is an old whitewashed stone fort, with twenty embrasures, and eleven small smooth-bored guns, mounted. The fort stands low, and is half hidden behind a cliff which slightly projects to the south.

A battery named Kiamleh, mounting 30 guns, is situated a little to the southward of Maitos on a hill which slopes towards the strait.

MAITOS (Ancient Madytus), stands on a low cliff at the end of the valley that extends across the peninsula at this point, and at the foot of Maitos tépé which forms the north side of that valley. It is a small town, with a large conspicuous Greek church standing in the centre, and sixteen windmills in a line to the north and south of the town. There is a small cotton factory at the north extremity of the houses, distinguished by its tall chimney.

Three miles to the N.E. of this village, where the remains of an old castle are seen, stood the ancient Sestos, so well known by the story of Hero and Leander. The Turks have built there the village of Yalova; and between it and Maitos, on a steep part of the coast, there is (1853) a battery of 50 guns named Bokali Kaleh-si,* which, with those already mentioned, complete the defences of the strait on the European side.

Thus, in a space of about 5 miles, a powerful and formidable artillery, amounting to upwards of 400 pieces of heavy cannon, have been (1853) so brought to bear upon the channel that they cannot be eluded; for the angular character of both sides of the strait, their distance from each other, which is never more than 2 miles, and in one part only three-quarters of a mile the arrangement of the batteries, which allows of always working two at the same time against any vessel, and lastly, the current, which sets always from east to west at a rate of 3 to 4 knots, will prove sufficiently that the Dardanelles would be difficult to pass from the westward, if the forts are well kept up, and the guns handled by good artillerymen. On the other hand, the monstrous pieces of cannon without carriages which throw stone shot, and are of a prodigious calibre, are much over-valued; for they are difficult to point, and the direction of their fire being perpendicular to the channel, they can only be fired once as the vessel passes.

At the north end of Maitos the coast makes an almost rectangular bend

* Bokali Kaleh is an old quadrangular, whitewashed stone fort, having a conspicuous minaret in its centre. The fort, which now only mounts twelve small guns, is built on a slightly projecting low, flat, rounded point, formed, at the entrance of the Bokali valley, by the stream that runs down it.—[1872.]

to the north and east, and thence maintains a general N.E. by E. direction to Gallipoli, 19 miles distant.

Anchorage.—There is anchorage off Maitos, in 17 fathoms, abreast the factory, at a distance of $2\frac{1}{2}$ cables from the shore, but the anchorage is not recommended as the current is variable in this locality. The coast bank here extends a cable from the shore.

KHELIA LIMAN, situated three-quarters of a mile to the north of Maitos is a well-sheltered bay, facing the S.E., half a mile wide at the entrance, and 4 cables deep. The sides of the bay are formed by the steep slopes of Maitos and Khelia hills, which are destitute of vegetation. A small river runs into the head of Khelia bay.

Anchorage.—There is anchorage in the centre of Khelia Liman, in 14 fathoms, and the shore is moderately steep; but the anchorage is subject to squalls, and being out of the track of vessels, is seldom occupied. Sailing vessels pass this part of the strait either with a fair wind or in tow of a tug.

Water.—Water is procurable from a fountain on the west side of the bay, near some ancient ruins.

LIGHT.—On Bokali Kaleh-si is a staff on which are hoisted two vertical *green* lights, 46 feet, and 26 feet high respectively, above the sea; they are visible about 5 miles.

Mal Tepe Hill, situated one mile to the north of Khelia Liman, is conical and conspicuous, having the appearance of a large tumulus.

Two miles inland is a small Turkish village, called Codjada.

From the north point of Khelia Liman, the coast trends north-eastward round the foot of Khelia hill, past the mouth of Bokali valley, and again along the foot of the coast range to Sestos point, a distance of 3 miles.

A bank of 16 feet runs along the coast from Khelia to Bokali, and extends in some places about $1\frac{1}{2}$ cables from the shore, but beyond Bokali not more than a cable.

Anchorage.—Under the lee of the point of Bokali a vessel can anchor in 12 fathoms, with the fort bearing N.E. and Khelia tepé hill W. $\frac{1}{2}$ N.; but the water shoals very suddenly.

Submarine Telegraph.—350 yards to the eastward of Bokali Kaleh-si another submarine cable crosses the strait to Nagara point. Its termination on the European side is marked by a buoy close to the shore.

SESTOS POINT is bluff and steep; near its extremity is a ledge, 20 feet above the sea, on which a road is made.

The 3-fathoms line of soundings at this part is here one cable from the coast, and skirts the shores of Ak Bashi bay. The south-east extremity of the bank is marked by a red buoy in 6 fathoms. From the buoy Bokali minaret bears W. $\frac{1}{2}$ S. The edge of the bank is steep-to.

Ak Bashi Liman, a bay of which Sestos hill is the south-west extremity, is three-quarters of a mile broad and a quarter of a mile deep. The north shores of the bay are low and sandy. A small stream falls into the middle of the bay.

On the hills at the back of Sestos point, forming the west side of Bashi valley, are the remains of an old Byzantine castle, 300 feet above the sea. The castle is not easily seen, as its walls are of the same colour as the ground on which it stands, but a Tekeh or monastery adjoining it, surrounded by plane trees and cypresses, points out its position.

Anchorage.—There is good anchorage in Ak Bashi Liman. A depth of 11 fathoms will be found in its centre, with the brick kiln at the bottom of the bay bearing N.N.W. 2 cables distant.

The Coast.—From Ak Bashi, the coast, forming many small sandy bays, trends N.E. for $3\frac{1}{2}$ miles to Ouzoun Burnu; deep water will be found at a cable from the shore. A succession of small hills and cliffs rise to a central hill, named Bakajak, 820 feet high, which is from most views of a remarkable conical shape.

OUZOUN BURNU is very low. A bay, open to the east and to the prevailing winds, is formed to the north of the point. A depth of 20 fathoms will be found at half a mile from the shore.

Ulgar Déré.—The river Ulgar falls into the straits a few yards to the northward of Ouzoun Burnu, and in winter is a considerable stream, but in summer a small rivulet. To the southward of Ulgar Déré the coast bank, which is here composed of sand and mud, extends $1\frac{1}{2}$ cables. Two miles inland are the villages of Ulgar and Pazarli.

The Coast.—From Ouzoun Burnu the coast extends N.E. for 3 miles. All this part of the coast is steep, and can be approached within a cable, except in the little bays opposite Bergaz, where shoal water extends a cable.

Indji Liman is a bay formed by the projection of Karakova Burnu. In the centre of the bay there is a good night anchorage, protected from north-east winds, in 7 fathoms, 3 cables from the shore. In the northern part of the bay the bank extends $1\frac{1}{2}$ cables from the shore. The western side of Indji Liman is moderately high, the spurs from Baïrak Tépé running to the beach, but the north and east sides are low.

KARAKOVA BURNU is a low sandy point having deep water at a cable distant. The river Karakova discharges itself at the north end of the point, and in winter the whole coast is swampy.

GALATA LIGHTS are situated on the south extremity of Karakova Burnu, and consist of two vertical *green* lights, 42 feet and 49 feet above the sea, hoisted on a staff which surmounts a square white house; they are visible 5 miles.

The Greek villages, Galata and Bahir, are conspicuous, as they stand on the summit of the coast range ; Galata is half a mile from the sea, and Bahir one mile and a half. There are a number of windmills close to both villages.

Beyond the entrance of Karakova river, the coast trends in nearly a straight line 3 miles to Galata Burnu, with a sandy beach, steep-to.

Galata Burnu is a low point, the south-west termination of the bay of Gallipoli. At the back of the point is the plain formed by the entrances of the valleys of Kouslou Déré and Bouyouk Déré, that circle round the mountain of Ak Yarlur.

Buoy.—Off Galata point is a red buoy, in 8 fathoms, $1\frac{1}{4}$ cables from the shore. Close inshore of the buoy there is a depth of 3 fathoms.

GALLIPOLI BAY.—From Galata point the coast trends to the north and east, forming Gallipoli Liman (or bay), which is 3 miles broad and about a mile deep. The bay is divided into two nearly equal parts by a point which projects about 4 cables into the channel. The shores of the bay for the most part suddenly terminate in low yellow cliffs, about 80 feet high, with small ravines between. The low table lands that form the immediate background are destitute of trees, and present a desolate appearance. The mountain of Ak Yarlur, with its picturesque white and yellow chalk cliffs, bears W. $\frac{1}{2}$ S. from the town of Gallipoli.

The south-western portion of Gallipoli bay is skirted by a rocky shoal, in some places nearly awash. The shoal is half a mile long and extends 3 cables from the shore.

Middle Bank fills the north-eastern half of Gallipoli bay ; the centre and most projecting part of the bank lies one mile W. by S. from Gallipoli point and nearly 4 cables from the shore ; here the soundings suddenly diminish from 5 fathoms to 16 feet, then shoaling towards the shore. Utze bridge bearing N.N.E. $\frac{1}{2}$ E. and in line with the easternmost of a row of mills to the north of the town will lead clear of the bank. This bridge is a wooden one, and spans a small stream called the Utze Kiouprou Déré (Three bridges river).

Anchorage.—The anchorage in Gallipoli bay is much frequented by sailing vessels as a night anchorage when working to windward. It is well protected from all winds except those from south and east ; these winds however, raise but little sea, and the holding ground is good. The best berth is just to the eastward of the bearing of the clearing mark given for Middle bank, where good holding ground will be found in 9 fathoms, with the south point of the town bearing E. $\frac{1}{2}$ S. distant 6 cables. Nearer the town and in a more convenient position for communicating, the water is deeper. The swell from the sea of Marmara sets round the point.

There is also anchorage on the west side of the bay, on a bottom of mud,

in 8 to 9 fathoms ; vessels are well sheltered there from N.E., but they will have the whole force of the wind from the eastward, and would be in an awkward position if it came on to blow hard.

Buoy.—A buoy used by mail steam vessels lies in 14 fathoms, 3 cables from the small craft port.

Another good anchorage is to the eastward of the last-mentioned buoy, in 14 fathoms, with the Pacha's office, a conspicuous yellow house which stands on a low conical hill in the centre of the town, in line with the health office, a yellow house on the shore to the north of the camber.

GALLIPOLI POINT.—The east point of Gallipoli bay is rocky, and foul ground extends off it to a rock of 12 feet which lies W.S.W. a cable from the point. There is deep water close outside the rock.

From Gallipoli point the shore trends N.E. for half a mile, forming the sea face of the town of Gallipoli. This piece of the coast is all rocky, with low perpendicular cliffs and outlying rocks extending about 60 yards. The coast then sweeps in round the lighthouse point to Baschesmé Liman, the north anchorage of Gallipoli.

Town.—Gallipoli, the ancient Callipolis, the largest town on the Dardanelles, was the first place in Europe captured by the Turks, and was held by them a hundred years before they obtained possession of Constantinople. It is built on the rocky promontory between Gallipoli bay and that of Baschesmé, and now contains about 17,000 inhabitants, consisting of Turks, Greeks, and Jews. The town, which is the seat of government of the province of Gallipoli, in the Valyat of Adrianople, possesses many mosques and minarets, and has great notoriety as a burial place for Mussulman saints ; its cemeteries are very extensive.

The trade is principally in grain, cotton, and live stock sent to Constantinople. Provisions of all kinds may be procured here, but other stores are scarce.

Cambers.—On the south side of Gallipoli town are two small cambers ; the outer one has an area of $1\frac{1}{2}$ acres, and a depth of 7 feet ; its entrance is 30 feet wide.

The inner one is about one-third the size of the other, and is not much used. By its side is an old Genoese tower. The outer chamber is much used by coasting craft ; the vessels are quite hidden from the roadstead by houses.

Water.—There is a fountain near the cambers from which water can be obtained, but as it runs very slowly, vessels generally send their boats to a fountain in the north bay of Baschesmé, where there is a much larger supply.

Pratique Post.—The health office, which stands just to the west of the entrance to the port, is a yellow building. Pratique can be obtained here for Constantinople.

LIGHT.—On the sea face of the town at the edge of the cliffs, which are 90 feet high, and a little short of the south point of Baschesmé bay, is Gallipoli lighthouse, a white stone tower, 30 feet high, from which is exhibited, at an elevation of 108 feet above the sea, a white *revolving* light, *every half minute*, visible in clear weather from a distance of 18 miles.

The lighthouse is in lat. $40^{\circ} 24' 27''$ N., long. $26^{\circ} 41' 19''$ E.

BASCHEMÉ LIMAN (Best Fountain bay) is situated on the north side of the promontory of Gallipoli. Round its rocky south point the coast trends west, and then, losing its rocky character at once, sweeps round north with a sandy beach for 4 cables, when it turns east, and again becoming rocky, runs with little indentations one mile to the north point of the bay, called Eski Fanar Burnu.

Anchorage.—There is anchorage in Baschesmé bay in 13 fathoms about $2\frac{1}{2}$ cables from the shore, with Gallipoli lighthouse bearing S.W. $\frac{1}{4}$ S. There is no protection here from N.E. winds; a considerable swell sets in the bay, and the holding ground is not so good as that of Gallipoli bay. Shoal water extends from the sandy bottom of the bay for one cable, and a north-east wind makes a heavy surf in it, otherwise the bay is clear of danger.

Water.—Landing can generally be effected in the north-west corner of Baschesmé bay under the lee of a small rocky point, not far from the fountain that gives its name to the bay, and where casks can be filled in boats.

Eski Fanar Burnu is a rocky point about 25 feet high, on which stands Gallipoli old lighthouse, a square white tower 30 feet high. Off the point rocky ground of 6 fathoms depth, on which the water is much discoloured, extends a cable.*

From Eski Fanar point the land trends north for 2 miles, in a long extent of sandy bay, having deep water within 2 cables. An isolated remarkable rock named Tchan Kair lies on the beach 4 cables north of the point. The plain behind this bay is called Ok Meidan, and is well cultivated. Through it passes the road from Gallipoli to the interior, across the isthmus of Boulair.

At the head of this bay the coast trends E.N.E. past the foot of Karaïokous hills, and stretches away with very slight deviations from a straight line for 30 miles, forming the north shore of the sea of Marmara. At the upper part of the bay a shoal bank of $2\frac{1}{2}$ fathoms extends off the land for $3\frac{1}{2}$ cables, but gradually closes the shore, till a mile further east it is but a cable distant.

* See Admiralty chart, gulf of Xeros (showing the east coast of Gallipoli peninsula from Gallipoli to Dohan Aslan point), No. 2417.

CURRENTS, WINDS, AND WEATHER.

The general direction of the current in the Dardanelles is from the sea of Marmara to the Mediterranean, or to the S.W. The points projecting from the land have the effect of changing the course of the current by causing eddies, of which in some parts of the strait, especially in the bays, advantage may be taken by a vessel proceeding eastward with a light wind. In general, along the coast of Europe, where the points are less prominent, there are few eddies; on the coast of Asia, though favoured by eddies in the bays, a vessel has to go through the whole strength of the current when rounding the points.

The strength of the current is variable, and depends much upon the direction and force of the wind, and it will be easily understood, upon the heavy rains and snows of winter, which swell the large rivers, falling into the Black sea. At that time, when it blows hard from the northward, the violence of the current increases, especially in the narrows, and it has been known to attain during the first few days a rate of 5 knots between the Old Castles (Chanak Kaleh-si and Kilid Bahr). During strong south-west winds the current is sometimes reversed. But this is unusual, and as north-east winds prevail nine months of the year, the south-westerly current may be regarded as almost permanent. From Gallipoli to Koum Kaleh, the average strength of the current may be estimated at $1\frac{1}{2}$ knots for the whole distance.*

Sea of Marmara.—The current begins to make itself felt in the south-western portion of the sea of Marmara near Hora. Here it runs entirely along the European shore and in the centre, the Asiatic side being protected by the Marmara islands. Its maximum rate at Hora is about one mile an hour.

Gallipoli strait.—In Gallipoli strait the current becomes stronger, and varies between one and 2 knots. The current extends from shore to shore, but is slacker at the sides than in the middle.

In Gallipoli bay there is an eddy, running round the bottom of the bay towards the town.

In Tchardak and Lampsaki Limans the same weak eddy exists, but is by no means regular.

Galata point.—At Galata point, where the strait again narrows, the strength of the current on the average is one knot, and here there is no eddy on either side of the strait.

At Karakova point the same may be said, but there is slack water in Indji Liman on the south-western side of that projection, but only in the bight of the bay.

* See summary of Commander W. J. L. Wharton's observations on the currents of the Dardanelles and Bosphorus, at page 100.

Kodjouk Burnu.—At Kodjouk Burnu, and along the shore to its north, the current runs strongly; its maximum strength off the point is about $2\frac{1}{2}$ knots. This is one of the most difficult points for a vessel to pass, as there is no eddy on either side.

Under the lee of Kodjouk Burnu there is, however, slack water, or an eddy sometimes very strong, but of no use for navigation to the northward of Saltik Liman Burnu, as it extends only a short distance from the shore. Between Saltik Liman Burnu and Abydos the eddy is sufficiently broad for a vessel to work to windward in.

On the European side the current runs close along the shore the whole way to Bokali Kaleh-si, the only exception being a slight slack in Ak Bashi bay.

Abydos and Sestos.—Between Abydos and Sestos points, where the channel narrows, the current again becomes stronger. There is occasionally a slight eddy on either shore to the eastward of these points.

Nagara point.—At Nagara point the average rate of the current is nearly 2 knots. The stream sets W.S.W. over the end of the spit across to the European shore, to the south of Maitos, and is there deflected to the south. On the European side it follows the line of coast from Sestos point to Bokali Kaleh-si. Between Bokali Kaleh-si and Maitos there is an eddy.

Under the lee of Nagara point, and on the Asiatic shore, as far south as Chanak Kaleh-si, there is an almost continuous eddy extending some distance from the shore.

The Narrows.—At Chanak Kaleh-si the current is more rapid than in any other part of the strait, and this is the most difficult part to pass. The current extends from shore to shore, with no eddies, and is stronger at the sides than in the centre. Its average rate is about 2 knots, its maximum 4 knots. To the south and south-west of the Narrows there are eddies on either side.

Sari Siglar Bay.—On the Asiatic shore, in Sari Siglar bay, there is an almost constant eddy, setting from Kephez point to Chanak Kaleh-si; but this bay is so filled with shoals that the eddy is not of much use to vessels, except that it makes the anchorage a quieter one.

On the European side slack water, extending $1\frac{1}{2}$ cables from the shore, will be found for 3 miles to the southward of Namazieh point. The current runs along the European shore to Eski Hissarlik, and thence across the mouth of Morto bay, running over the shoals on its western side, and passing at a distance of 2 cables outside Seddul Bahr.

At the bottom of Morto bay there is a slight eddy that sometimes extends to the northward of Eski Hissarlik.

Kephez Point.—The current runs close past Kephez point, but to the southward of it, along the Asiatic coast to Kavanlik Liman, there is an eddy extending nearly a mile from the land.

The main current again strikes the Asiatic shore on Mendéré bank, and runs along to Koum Kaleh point with great strength.

South-west Entrance of the Dardanelles.—Between Koum Kaleh and Seddul Bahr the current runs W.S.W. at the average rate of $1\frac{1}{2}$ knots. the maximum being about 3 knots. The current is stronger on the Asiatic side, and rushes along the edge of Yeni-shehr bank with great velocity.

Thence the current flows to the S.W. into the Grecian Archipelago, and passing Rabbit islands and Tenedos island makes its influence felt as far as Doro channel, down which a current fed by the stream from the Dardanelles is continually flowing.

WINDS and WEATHER.—In the Dardanelles, north and N.E., or Etesian winds, named by the Turks Meltem, prevail on an average nine months of the year, whereas the irregular westerly winds last scarcely three months, during which period it frequently happens that they are not felt in the Archipelago, where it is generally a calm. The winds are most variable at the equinoxes, and generally any change from north to south will take place at new or full moon.

N.E. winds.—In winter N.E. winds often blow hard for several days, if the wind should have set in from that quarter after a squall; these winds are often accompanied by fog and snow. Navigation then becomes impracticable in the Dardanelles for a sailing vessel.

In the summer north and N.E. winds are more constant; they are clear, agreeable, and moderate, and the barometer stands high. They spring up generally in the morning, die away with the setting of the sun, and are followed by light off-shore breezes, chiefly in the deep bays. The regular but gentle sea and land wind, is called the Imbat, and prevails all through the Archipelago for a considerable time. It lasts sometimes so long that it is not a rare occurrence to see 200 or 300 vessels in Tenedos channel or in the other anchorages waiting a favourable and enduring breeze. With every slight southerly air they get underway, but only to shift from one anchorage to another, and they reach the sea of Marmara after having accomplished the distance by short stages.

When in the morning a luminous horizontal streak, level with the land is seen in the eastern horizon, (provided the streak is perfectly distinct, and topped with grey clouds,) a breeze of wind from the N.E. may be expected which will freshen during the day and die away at night.

At the equinoxes, and in the winter, if the wind come suddenly from the N.W. or north with a squall and heavy banks of clouds, it will veer to N.E.

and blow hard for about three days. But generally the N.E. wind does not blow hard for more than a day.

N.W. winds blow occasionally in all seasons, the barometer standing at about 29·85. During the summer these winds blow fresh and the weather is clear. In winter they blow with heavy squalls.

When white clouds are seen rising from the coast of Europe, it is a sure sign that the wind will be from the N.W.; and if the clouds revolve in rising, it will blow hard from that quarter. Heavy squalls will then sweep along the European shore, and if great care be not taken, will cause serious damage to vessels under sail.

Thunder-storms sometimes occur; they come from all directions, but more generally from N.W. with violent rain and heavy gusts of wind from different quarters.

S.W. winds may occur in any month. In winter they are frequent, blow hard and bring rain; the sky is loaded with clouds, and the barometer usually stands at about 29·65 inches. It often happens that S.W. winds, though very violent in the Mediterranean hardly reach the Archipelago, and fall calm at the entrance of the Dardanelles; sometimes however they blow home to the strait, and there suddenly fly round to the N.E. in a squall. Whenever a vessel approaches the Dardanelles, with the wind from the west or S.W., however long it may have held, a good look-out should be kept for the least brightening of the horizon towards the sea of Marmara, to prevent the vessel being taken aback by the sudden and dangerous shifts of winds. In autumn and in winter, after entering the strait with fresh southerly winds and clear weather, a vessel may almost be sure of finding the wind from the S.E. in the sea of Marmara.

In autumn the weather, with S.W. winds, is clear. The winds veers to south in the Dardanelles, and S.E. in the sea of Marmara; and they are in one respect favourable to navigation, as the land is then very distinct.

Whenever in the night in fine weather, with a clear sky, a heavy dew should fall, the wind is almost sure to come round to the westward; and is sometimes the precursor of a violent west or S.W. wind; but although there is then a decided appearance of bad weather, the wind will generally in a few hours fall light, and without reaching the sea of Marmara, will subside in copious showers of rain.

During the period from March to September, S.W. and S.E. winds are rarely experienced; at that time it is indispensable that vessels should take advantage of off-shore winds, if it be only to shift from one anchorage to another. A light south wind will sometimes commence in the afternoon, veer to the north at midnight, and blow hard. The change will sometimes be preceded by rain, but more frequently by a calm clear night with a heavy dew.

DIRECTIONS FOR PROCEEDING TO THE EASTWARD.

Aspect.—A vessel coming from the south-westward bound up the Dardanelles, will first identify the entrance by the white cliffs of cape Helles, which forms the north point of the strait, and on which stands conspicuously a white stone lighthouse. On the south or right side are the cliffs of Sigeum, terminating at the mouth of the strait with the hill of Yeni-shehr, also steep and cliffy. Another very conspicuous distinguishing mark on the European side is Tree peak, 700 feet above the level of the sea, and 9 miles N.E. of cape Helles. This makes as an isolated conical peak with one large tree on its summit.

On approaching nearer, the small towns of Yeni-shehr and Seddul Bahr will be perceived on their respective sides of the strait; the former is built on the summit of the hill of the same name, 230 feet in height; only a few houses will be seen while the ship is still to the southward, but on bringing it to bear more to the N.E. the houses will open up and also a remarkable row of nine windmills which stand on the north side of the town.

The castle of Koum Kaleh will then also be seen standing on a low point that stretches from the hill of Yeni-shehr to the north.

Seddul Bahr is on the north side of the strait, and stands on the slope of the hill, forming cape Greco, which is three-quarters of a mile to the east of cape Helles. Here is one of the old stone fortresses which gives its name to the town, and is a conspicuous object from its great size, and the low but massive towers that rise at the angles of the castle.

When these two towns can be distinguished, the entrance of the Dardanelles will be plainly opened.

General Remarks.—Having described both shores of the Dardanelles, as well as their adjacent anchorages, the winds and currents, and also the aspect of the land as seen from a vessel approaching from the south-west, we propose now to lay before the seaman some cursory rules for the navigation of the strait; first apprising him that no vessel is allowed to enter nor to work through the strait during the night, and that the passage should never be attempted in the thick fogs which occasionally occur.

In order to make a quick passage every advantage should be taken of daylight, for fair winds never last long there, and very seldom even through the 24 hours. The currents should also be carefully studied with a view of keeping the vessel always in a zone of back or counter currents, or in still water; she will thus be almost always in a convenient position

for anchoring. The anchors should therefore be kept ready, and in all cases the lead should be carefully hove.

As a rule, a vessel can anchor for the night in any part of the strait; but, generally speaking, the Asiatic side is the best, as the water is not so deep, and it shoals less suddenly. The holding ground is good. The best anchorages have been described.

In general, whenever a vessel is forced to bring up, the anchor should be let go close in shore, in no great depth of water and out of the influence of the currents; for the greater the depth, the greater the danger of dragging the anchor, and of being carried away by the strength of the current, especially if it should blow hard from the northward.

It should also be remarked that, under the high lands on the European side, vessels are often becalmed near the points, and if the precaution of anchoring is not taken they are carried away into the strength of the current, and it is then difficult to regain an anchorage. Often likewise in running, when it is perceived from the mast-head that the wind has not reached the other side of the point the vessel is nearing, it will be necessary to try and keep in the slack water, or anchor until the breeze has passed.

Discoloured water exists at some of the points, but it is not always a sign of shoal water.

DIRECTIONS.—For a steam vessel or a sailing vessel with a strong fair wind it is recommended to keep the European side of the strait on board about 2 cables distant, except in the narrows at Chanak, where the current is weaker in the centre of the strait than at the sides.

Beyond the Narrows keep on the Asiatic side to avoid the current, and steer north to pass outside Nagara buoy, which may be passed as close as possible, but vessels should not pass eastward of the buoy, as there is but little water and the current sets towards the spit.

After passing Nagara buoy steer for Sestos point N.E. until within a distance of 3 cables from the European shore, then steer along the coast, keeping at that distance outside all points, and crossing the entrances of the little bays until the sea of Marmara is reached. Steer direct from Galata point to Gallipoli point to avoid the Middle bank. On this course a steam vessel will nearly always be in the adverse current, but not in its strength, and the time lost in stemming it will be more than gained by the directness of the course.

LIGHTS.—The Asiatic side of the strait is marked by red lights, the European side by green lights, with the exception of cape Helles light and Gallipoli light which are both white lights.

Sea of Marmara.—From Eski Fanar a steam vessel should maintain

a course E. by N. $\frac{1}{4}$ N., to clear Heraclitza point. No vessel should try to pass within a mile of the shore. Directions continued at page 78.

Return Voyage.—On the return voyage keep in the centre of the strait. In a sailing vessel if the wind should be contrary make short tacks, taking care to keep as much as possible in mid channel. If it should blow too hard from the S.W., to allow of proceeding into the Archipelago, then anchor on the Asiatic coast in one of the good anchorages previously mentioned.

A SAILING VESSEL WITH A LIGHT FAIR WIND having passed through Tenedos channel (*see* page 11) should steer N.N.E. $\frac{1}{2}$ E. for cape Helles lighthouse until Yeni-shehr south buoy is sighted, from which steer straight to the north-west buoy, passing close outside it. Then alter course gradually to pass 2 cables outside Koum Kaleh point, taking care, in running along this edge of the shoal, not to shoal less than 10 fathoms water, as it shoals rapidly.

When Koum Kaleh bears S.W., alter course to E. by S. $\frac{1}{2}$ S. for Kavanlik Liman buoy, which should not be passed too closely.

From the Yeni-shehr north-west buoy, the vessel will have had a strong current to contend with and will now pass into slack water; then keep the shore half a mile distant, as far as Kephez point.

Kephez Point is another difficult place to pass, and as the shoal off its south end is rounded and dangerous, a ship should, when a mile past the White Cliffs (a good place with a S.W. wind to heave to and get pratique), and about a mile short of Kephez point, steer over to the European shore, where, by following the coast line within 2 cables, slack water will be found up to the Narrows.

Arrived within half a mile of the Narrows, keep out into mid-channel, where the current will be less strong, and then steer gradually over for the centre of Dardan bay.

Many vessels with a fair wind prefer taking pratique at Chanak.

Narrows to Nagara.—Pass outside the buoys in Dardan bay and steer along the Asiatic shore to the north of Medjidieh battery at about 2 cables' distance, until close to Nagara point. Then steer for the buoy off this point, leaving it close on the starboard hand. After passing the buoy alter course to E. by N. $\frac{1}{2}$ N. to pass 2 cables north of Abydos point.

With a light S.W. wind caution is required to prevent being swept inshore by the current striking on the port bow.

When Abydos point bears South, alter course again to E. $\frac{1}{2}$ S. for Ay' Iani buoy, which course will bring the vessel again into slack water.

Ay' Iani and Moussa banks.—Ay' Iani buoy must not be passed too closely, but when within half a cable of it alter course again to E. by N. $\frac{3}{4}$ N. to pass Moussa buoy.

Should these buoys not be seen, the summit of Maitos hill kept a little open of Abydos point W. $\frac{1}{4}$ S. leads in 4 fathoms north of Ay' Iani bank.* Bes Chamlik (seven fms) in line with Kaïr Burnu S.W. $\frac{3}{4}$ W. will lead N.E. of Moussa bank.†

Saltik Liman Burnu.—From Moussa buoy a vessel can pass within 2 cables of the shore, as far as Saltik Liman Burnu, a white rocky point $1\frac{1}{2}$ miles south-west of Kodjouk Burnu. From Abydos point the vessel will have been in slack water, with perhaps an eddy in her favour; she must now again stem the current, which extends from shore to shore, from Gallipoli bay to Bergaz lighthouse.

Kodjouk Burnu.—From Kodjouk Burnu a vessel had better keep out in mid-channel until abreast of Lampsaki, when, by keeping rather towards that shore, and steering for Tchardak point, she will get a little less current.

Gallipoli bay.—There is an eddy in Gallipoli bay, but not strong enough to make it worth a vessel's while to go out of her way to take advantage of it, and the middle bank is dangerous.

When between Gallipoli and Tchardak point, a good look-out must be kept for the west buoy of Zindjir Bozan bank, and the vessel being kept well out from the shore, should steer N.E. to clear that dangerous shoal, which extends a mile from the land.

Sea of Marmara.—When past Gallipoli and in the sea of Marmara, steer E. by N. $\frac{3}{4}$ N., taking care not to approach the European shore within a mile, and at night, especially, to give a wide berth to all the shore as far as to Hora light.

A SAILING VESSEL WITH A FOUL WIND.—With strong N.E. and N. winds it is almost impossible to go up the strait; but with a good working breeze, a smart vessel, well handled, will be able to work from the entrance to Kephez bay, or to some anchorage north of Kephez point; thence up to Gallipoli will not be an easy task,—still it has been fairly accomplished, and the following is the mode recommended in order to ensure success.

The vessel having as previously recommended worked through Lemnos channel (*see* page 9), should endeavour while on the port tack to fetch cape Helles, and should give that cape and Seddul Bahr a berth of 3 cables. When Seddul Bahr bears North, steer East if the wind permit; and,

* See view D. on Admiralty chart, No. 2429.

† See view C. on Admiralty chart, No. 2429.

after passing Morto buoy, stand over close hauled to the Asiatic side, and work up in the eddy there, taking care to tack short of the edge of the main current, which may be distinctly seen, and is usually about a mile and a half from the Aremkeui shore.

When entering the strait with a N.W. wind in settled weather, instead of closing the Asiatic shore keep the European shore on board; a vessel will thus be able to fetch the anchorage to the westward of Seddul Bahr, whence she will be able to take advantage of the shift of wind. Keep a good look out for the squalls which are felt abreast the various bays.

Kephez Point.—On approaching Kephez point, the probability is that the current will be too strong for the vessel to work against, but, if it be possible, a vessel should anchor in Sari Siglar bay, in preference to Kephez bay, as the former anchorage is more commodious, and within easy distance for boat communication with Chanak, where tugs can be obtained.*

Tugs can also be obtained at Kephez bay, or on the European shore, in Souandéréh or Avouzlar.

The Narrows.—With a foul wind it is almost impossible to proceed under sail through the Narrows past Nagara point, and a master will have to choose between paying for a tug or waiting for a fair wind, perhaps many days.

Vessels should be prepared to weigh with the first signs of a fair wind, as southerly winds only last a few hours in the strait; and as an additional reason for this continual state of preparation it is obvious that she should be always ready to take advantage of the land breeze, which in fine weather springs up in the morning.

When Dardan bay is gained the greatest difficulties are overcome; thence a vessel working on the Asiatic coast, and not keeping out into the strength of the current, ought in four or five hours, even with a reef or two in her topsails, to get to the anchorage to the south of Nagara point.†

* A Russian brig of war, during a strong N.E. wind, which had prevailed for four or five days, worked up on the Asiatic shore to Kephez point, then stretched across the current, and anchored abreast of Souandereh rivulet. In the evening, when the wind fell light, by kedging up close in shore, she arrived in a position that would allow her on the following day, when the breeze again freshened, to fetch an anchorage to the north ward of Kephez point; and there she remained till next morning, when a land breeze from the eastward allowed her to make good her progress as far as Nagara point.—*Remarks by J. W. King, Second Master, R.N., December 1834.*

† There is an instance of an English brig getting underway from Dardan bay at 9 a.m. with a fresh breeze from the N.E. varying easterly, and anchoring at 2 p.m. in Nagara Liman. The following day she proceeded with the same weather, and in the evening, having succeeded in rounding Nagara point, she anchored in the bay to the north of Abydos.

Vessels occasionally get through the Narrows with a fair wind, and are then taken aback; in which case it may be advisable, if the vessel works well, to try working up on the Asiatic shore, making short tacks up to Nagara, and, when nearly up to that point, stand well over towards Khelia bay, and work on that side until Abydos point can be weathered, and the slack water to the N.E. of it gained.

Ak Bashi Bay.—From Ak Bashi bay, stand over at once to the Asiatic side, tacking short of the buoys on the Ay' Iani and Moussa banks. Vessels frequently ground on these banks through trying to make the most of the eddies.

If the main current be strong, keep on the Asiatic side as far as Saltik Liman Burnu, a white rocky point, one mile short of Kodjouk Burnu. But, if the current be slack, a not unusual occurrence at this part, nothing will be gained; and the vessel can stand across to the European shore, which can be approached within $1\frac{1}{2}$ cables.

Kodjouk Burnu to Gallipoli.—From Kodjouk Burnu to Gallipoli bay there is no eddy. Tack short of Bergaz buoy. A buoy off Galata point indicates no danger, but is to guide the eye in standing straight on to the low shore.

On the Asiatic side the point of Lampsaki, on which stands five mills, must not be approached within $1\frac{1}{2}$ cables; and Tchardak Ova to the N.E. must be guarded against, as it is very low and projects considerably. A buoy is placed off the point. Do not approach the shore in Gallipoli bay within half a mile.

With these precautions it is better to stand well over to both shores at this part of the strait, where the current is rather slacker than in other parts of the Dardanelles.

It generally occupies 18 to 20 hours working from Nagara point to the anchorages of Gallipoli or Lampsaki. This task is possible with a smart vessel; and it should be thought worth the attempt, as it often happens that vessels are detained more than a month by adverse winds, without being able to get from the Archipelago to Gallipoli.

Anchorage.—The eastern part of the strait between Nagara point and Gallipoli, when it blows hard from the north and N.E. in the sea of Marmara, is far from affording the same shelter as its western part, because both sea and wind sweep violently through it. During daylight a vessel may keep under sail, but it is indispensable to anchor at night; in this case, the only alternative to prevent losing ground is to try and reach Gallipoli, which is the only anchorage where she can ride in safety till the gale is over.

Gallipoli Strait.—Opposite Gallipoli the current is again stronger. A vessel can stand close over to the European side: there is no danger at

more than one cable from the shore, either at the points or in Bas Chesmé bay.

On the Asiatic side a vessel can pass close along the south-western side of Tchardak spit, but as soon as she fetches to windward of the Tchardak light, she must tack short of that shore to avoid Zindjir Bozan bank, a dangerous shoal for which directions have been given at page 26.

A vessel drawing less than 15 feet can pass half a mile inside the northern buoy of Zindjir Bozan, but it is not recommended to do so, as the current is strong on the bank.

Past Eski Fanar point, a vessel can at once stand to the N.W. without fear, but must not get too far into the bottom of the bay, where the water is shoal for $3\frac{1}{2}$ cables from the shore. With a strong current, a vessel had better keep on the European side at this part. Directions (for sea of Marmara) at page 78.

REGULATIONS FOR PASSAGE OF THE DARDANELLES AND BOSPORUS
(AS IN FORCE, OCTOBER 1872).

No vessel-of-war is allowed to pass the town of Chanak or Dardanelles without a firman from the Sultan. She will however be permitted to pass the Castles and anchor in Dardan bay until such firman is received from Constantinople, through the Military Pacha at Chanak Kaleh-si. Firmans are only granted on special occasions, except to despatch vessels attached to the various embassies, or to the Danube commission.

Merchant vessels arriving at the Narrows at Chanak from the Mediterranean, between sunrise and sunset, can pass the Dardanelles without any formalities or stoppage, except for the purpose of taking pratique for Constantinople.

At night no vessels are allowed to pass up the Dardanelles. A constant watch is kept at the forts, and shotted guns are ready to stop vessels who infringe the regulations.

Vessels arriving at the Narrows after sunset are recommended to anchor in Sari Siglar bay in preference to Dardan bay, which is not so good an anchorage.

Pratique must be obtained at one of the undermentioned places, and should a vessel arrive at Constantinople without pratique from one of those stations, she will be fined.

The pratique posts are Seddul Bahr, Aspra Homata or White Cliffs, Chanak Kaleh-si or Dardanelles, Lampsaki, Gallipoli.

Vessels with foul bills of health will have to perform quarantine at Nagara, 2 miles above Chanak.

Should any epidemic prevail, either in the East or West, Chanak, the central health office, should always be touched at, to ascertain the special regulations in force.

On arrival at Constantinople, the bill of health must be shown, *see* page 111 ; and should the vessel be proceeding to the Black sea, two firmans can then be obtained, one to pass on to the Black sea, the other to return again through the Bosphorus and Dardanelles. Should Constantinople be her destination, one firman only is needed to pass back again through the latter strait.

On proceeding to the Black sea the vessel must stop off Anatoli Kavak, near the north end of the Bosphorus, on the Asiatic side, to deliver one of the firmans.

Return Voyage.—On return from the Black sea, the vessel must again stop off Anatoli Kavak to take pratique for Constantinople, subject, as before mentioned, to fines for non-observance; but if not intending to stop at Constantinople, she may pass straight through the Bosphorus.

At Nagara, just above Chanak, she must under any circumstances lie to, and deliver on board the Firman vessel stationed there her firman for passage, and receipts for all sanitary and light dues, which should be obtained at Constantinople on the voyage eastward. Vessels bound outwards may pass the Dardanelles at any hour if they comply with this regulation.

FIRMAN VESSEL.—The Firman vessel is painted yellow, with one mast, and at night exhibits one *red* light over two white lights placed triangularly. She is moored in the slack water a mile below Nagara point.

The Firman vessel is in communication, by signal, with the castles north and south of her.

CHAPTER III.

SEA OF MARMARA.

Variation in 1877 - - - 5° 10' W.

THE sea of Marmara (ancient Propontis) is united to the Black sea by the Bosphorus, and to the Archipelago by the Dardanelles. It is about 110 miles in length from east to west, without reckoning the deep gulfs of Ismid (ancient Nicomedia) and Mudania, and 40 miles in breadth in its widest part from north to south. The width at the western end for about 30 miles eastward of Gallipoli is 3 to 10 miles. From Gallipoli the north coast trends to the north-east 25 miles, and then abruptly returns to the east for 65 miles to Constantinople. The south coast, after bending a little to the south, regains its direction eastward for about 80 miles, then turns towards the north and joins the north coast at the Bosphorus, thus forming a vast gulf.*

The sea of Marmara is terminated to the eastward by two deep gulfs, of which one, that of Ismid, is 30 miles in length, and the other, that of Mudania, 20 miles. These two gulfs are separated by a high peninsula. There are two other smaller gulfs on its south coast, one to the eastward and the other to the westward of the peninsula of Artaki or Kapu Dag. They are separated by a small strip of land, which, according to Strabo, was formerly covered by the sea, and over which two wooden bridges had been thrown to communicate with the shore of Asia.

The islands of the sea of Marmara are divided into four groups. The first is perceived on leaving the Dardanelles, and lies at a short distance to the N.W. of Artaki peninsula.

The most important island of this group is that of Marmara (ancient Proconnesus), which has given its name to this sea, and divides it into two channels of unequal breadth. The channel to the north is formed by the coast of Europe and the island of Marmara, and is from 10 to 18 miles in breadth; the other, formed by the island of Marmara to the north, and the islands of the group to the south, varies from $2\frac{1}{2}$ to 5 miles in breadth.

The second group is called the Princes or Prinkipos islands, and is composed of nine islands, of which the largest, Prinkipo, has given its name to the group. They lie parallel with the coast 6 miles to the S.E. of Constantinople, and Pliny speaks of them as the Propontides.

* See Admiralty chart, sea of Marmara, No. 224; scale, $m = 0\cdot2$ inch.

The third is Kalolimni island, which lies off the entrance of the Mudania gulf, and abreast of the mouth of the river Mikhalich.

And lastly, the little islands of Mola, which are three in number, and lie off the eastern point of the peninsula of Artaki.

THE ASIATIC COAST.

To continue our description of the coast of Asia, at page 26 : Beyond Fanous hill the shore is again low, and the small river Bairam Déré, draining the valley of the same name, falls into the sea 3 cables eastward of the hill. Farther on, the hills on the east side of the Bairam Déré stand close to the sea, and show cliffs of about 220 feet in height ; the highest part of these, at the east end, in line with the summit of Codja Flamour hill, is the clearing mark for Zindjer Bozan shoal (*see* page 26). Beyond these again the coast continues its easterly direction for 5 miles to a point called cape Yuriji or Boz. The coast is alternately low or cliffy, and the hills rising higher and higher in the interior are moderately wooded.

Several shoals, of 14 or 16 feet, rock and sand, lie off this part of the coast at about 3 cables distant. There is deep water inside them.

CAPE YURIJI or BOZ is a triple point, about 70 feet in height. A shoal of 16 feet lies a little more than half a mile N.W. of the point. The old lighthouse tower on Fanous hill, in line with the summit of Ak Yarlar, bearing West, leads to the northward of this shoal, and of the others that lie to the westward.

YURIJI BAY.—Eastward of cape Boz the coast trends to the S.E. for $2\frac{1}{2}$ miles, then east for $3\frac{1}{2}$ miles, and then N.N.E. $2\frac{3}{4}$ miles to Kamir or Kamaris, forming a large bay, called Yuriji. Immediately beyond cape Boz is a straight flat sandy bay, the hills standing at a little distance from the coast, but at the end of this bay the hills are close to the shore, and present precipitous cliffs of different heights, varied by little sandy coves. This character the coast maintains to Kamaris,

From the sea, wooded hills appear to rise one upon the other with varied and pleasing scenery. The valleys are cultivated, and rich in flocks and herds.

There are no dangers in Yuriji bay, the coast being generally steep-to. A few rocky islets lie near the shore in some places.

There is no good anchorage in the bay ; the prevailing (N.E.) wind blows directly on the coast, and the holding ground is bad.

Village.—The large village of Yuriji is situated at $1\frac{3}{4}$ miles distant from the coast, in a fertile valley. Its produce is brought down to one of the little sandy bays above mentioned, named Keresli Iskalesi. Much charcoal is shipped from here.

KAMİR or KAMARIS LIMAN.—At the northern extremity of Yuriji bay is Kamir Liman, a sandy bay about a mile across, formed by the

curving of the coast line to the N.N.W., and terminating in cape Tarsana. Kamir Liman affords protection from north-east winds.*

Kamir Tchai.—The river Kamir empties itself in the centre of Kamir Liman. In the winter the flat land round its mouth is generally under water, and from this plain exhalations rise in summer that cause much malaria and sickness in the town. The river drains the large plain of Kamir Ovasi, is of considerable depth and width for many miles, and never ceases flowing; in summer a dry bar forms across its mouth, through which the water filters to the sea.

The Town, named Kamir by the Turks, Kamaris by the Greeks, the ancient Parium, stands on the shore of this bay, and is a collection of miserable houses placed on the right bank of the river, and under a high cliff that stands a short distance back from the coast. Kamir contains about 3,000 inhabitants, and possesses one mosque, placed on the beach. The part of the bay to the north of the town is still called the Arsenal, though no trace exists of any buildings.

Fine Hellenic walls of white marble may be traced for a great distance, probably the ruins of the encircling walls of the old town. A theatre can also be seen on the hill side facing the north-east below the mill on the point.

Heaps of stones, fragments of Roman walls, and underground passages, abound in the valley to the east of the present town. Half a mile up the Kamir valley are two arches, the sole relics of what must have been a magnificent Roman aqueduct, spanning the valley, and bringing water into Parium from the interior. The ruins of Parium may be seen on the other side of the hill behind the town.

Exports.—Charcoal, grain, vegetables, and live stock are exported to Constantinople. In 1830 a frigate of 60 guns was built at Kamir, of oak the produce of the trees which grow in the neighbourhood.

Water can be obtained from a fountain in the town, but it is not considered to be good.

Anchorage.—Good anchorage may be found in Kamir Liman at $2\frac{1}{2}$ cables from the shore in 12 fathoms, mud, with the extremity of Tarsana point bearing North, and Kamaris minaret S.E. $\frac{1}{2}$ S. The anchorage is well protected by the land northward and eastward, but is open to westerly winds.

From the point under the conspicuous mill to the left of the town, the remains of an old mole runs out under water, and which must be avoided.

CAPE TARSANA is a white, rocky point, 25 feet high, extending to the north-west and forming the termination of Kamir Liman. The

* See plan of Kamir Liman on Admiralty chart, No. 224.

coast line beyond trends to the south-east for half a mile, and then turning to the north-east, trends generally in the latter direction for nearly 2 miles, forming several sandy bays, with rocky points and cliffs between.

Touzli Islet.—Two miles to the eastward of cape Tarsana, and $2\frac{1}{2}$ cables from the nearest part of the shore, is Touzli islet, 125 feet high, and composed entirely of white marble. The islet is steep-to, and there are 7 and 8 fathoms between it and the shore.

Youmourta Islet.—To the eastward of Touzli islet the coast forms a shallow bay to another point a mile distant. Off this point lies Youmourta islet, 120 feet high, and like Touzli formed of marble, but does not show so white as the latter. Youmourta is connected with the land by a ridge having just enough water for a boat to pass over. A ridge of 5 fathoms extends 2 cables north of the islet.

Anchorage.—A vessel can anchor between Touzli and Youmourta islets close to the latter in 13 fathoms, opposite a small valley in which can be seen two mills belonging to Deirmenjik. In this berth Aksas Burnu will appear just to the southward of Youmourta. The anchorage affords protection from north-east winds.

The COAST.—Beyond Youmourta the coast extends East $1\frac{1}{2}$ miles to cape Aksas, forming a shallow bay between, broken up into sandy beaches and cliffy points.

Between capes Tarsana and Aksas the coast is free from danger, and deep water will be found 2 cables from the shore, the 5-fathoms ridge north of Youmourta islet excepted.

SHEIK MELIK LIMAN.—Cape Aksas is a cliffy point, about 100 feet in height. At this point the coast trends to the south-east to cape Kara Burnu which is 6 miles east of cape Aksas, and forms a large bay, called Sheik Melik Liman. This bay affords no anchorage, but there is landing on the long sandy beach in the centre. The land in the vicinity is uncultivated and hilly.

Aksas Village.—The little village of Aksas, inhabited by Greeks, lies in this bay, above a sandy beach, and at the foot of the hills.

CAPE KARA BURNU is a rocky headland off which lies a shoal having a depth of 5 fathoms.

CAPE KARA BUGA is $4\frac{1}{4}$ miles to the S.E. of cape Kara Burnu; on this point a few ruins are to be seen. The coast trends to the westward $1\frac{1}{2}$ miles, and then curves to the eastward for 26 miles to the peninsula of Artaki, thus forming Artaki gulf.

Anchorage.—In the bay formed to the westward of cape Kara Buga lies the village of that name, abreast of which a vessel may anchor sheltered from N.W., West, S.W., and S.E. winds. Anchor in 8 to 13 fathoms, mud, with the village bearing W. $\frac{1}{2}$ N., distant 9 cables. Do not go farther into

the bay, as its shores are bordered by mud flats, formed by the mud carried there by the river Bogha-sheher.

River Bogha-sheher or Sousoughir (ancient Granichus) lies 2 miles to the southward of Kara Buga village; it is now only a small stream, the mouth being obstructed by a marsh which prevents it getting to the sea, and has thus formed flats along the coast, extending seaward a distance of 6 cables.*

GOENAN or SATATI.—Thirteen miles to the eastward of the Bogha-shehr Chai, the Goenan, Satati, or Cēsepus river discharges itself into the sea by two mouths; and, like the Granichus, has formed flats along the shore extending one mile from the coast.

These two rivers are only small streams in summer, but in winter they swell with all the water coming down from the mountains and become torrents; the coast between them is marshy and flat, there being only one small and poor village named Dimestosla, lying 3 miles to the westward of the Goenan, and abreast of which a vessel might anchor in 7 to 9 fathoms, mud, but the roadstead is open to northerly winds. This part of the coast is without trade, and consequently very little frequented.

From Goenan river the coast trends to the eastward 9 miles, and then returning to the N.W. forms the gulf of Artaki.

Sazly Deré or Tarsius River is a small stream which runs into the sea 8 miles to the eastward of the Goenan, and near a poor Turkish village of about 25 houses called Sastcedere.

The COAST.—Between the mouths of the Goenan and Sazly rivers the coast is straight, free from danger, and with a depth of 7 fathoms near the shore, which deepens rapidly to seaward. The only villages to be seen are Moussa and Aout, both poor. The background of this part of the coast is made up of brown bare mountains, but in the plain there are many fine trees, which might be used in ship-building.

ARTAKI PENINSULA.—The peninsula of Artaki or Kapu Dagħ (ancient Cyzicus) 5 miles S.E. of the island of Marmara, is an enormous mass of high land in a triangular shape, the summit of which lies to the south and the base to the north; it is 15 miles in length from west to east, and 9 miles from north to south. It appears to have been in former times an island but is now united to the coast of Anatolia, by a low narrow strip of land a mile in breadth, which separates and forms with that coast the two bays of Artaki and Peramo; two wooden bridges kept up in former times the communication between the island and the

* This stream was celebrated by Alexander's first victory over the Persians, in the year 334 B.C., which victory was achieved on its banks, and was the beginning of that prodigious success by which the conqueror of Asia astonished the world.

main land. This peninsula, though mountainous, is fertile and well peopled. The high parts are covered with evergreen oaks, and in the valleys olives, figs, mulberries, and vines are cultivated. The fields are divided by stone walls, amongst which many fragments of Roman ruins are to be found.

Besides the two considerable villages of Artaki and Peramo, there are a dozen others inhabited by about 7,000 persons. The ruins of ancient Cyzicus stand on a high hill, about 3 miles eastward of Artaki, between the small villages of Kamouly and Koukoulou.

The north coast of the peninsula is straight from west to east, and has a depth of 8 to 9 fathoms near the shore; at its north-west point lies the village of Rharak or Gereke, built on the strand of a small bay called port Palaio. This bay has a depth of 7 to 9 fathoms, mud, but is open to northerly winds; it is frequented only by coasting vessels.

LIGHTS.—On the north-west point of Artaki peninsula the west part of port Palaio, are exhibited two *red* lights placed vertically, about 38 feet above the sea, and visible in clear weather from a distance of 5 miles. The lights are hoisted on a mast.

RHODA CHANNEL.—The west coast of Artaki peninsula is sinuous, but has a general trend from N.W. to S.E.* It forms with Pasha Liman island the Rhoda channel, which is only a mile in breadth. Rhoda channel gives short and easy access to the great bay of Artaki, or to any of the anchorages under the west side of the peninsula; and its entrance, when approaching it from the northward, may be distinctly recognised by the superior height of the land of Artaki to that of Pasha Liman.

The channel itself affords immediate anchorage throughout, except just off the low sandy point at Rhoda village, where a spit stretches out more than a cable; but to the S.E. of that point a convenient anchoring road will be found on good ground, in 13 fathoms, about 3 or 4 cables from the beach; and in one respect very preferable to that off Marmara or Artaki villages, or to Koutalai, for good water may be procured here with the utmost facility without the use of engines, from two streams, which are capable of supplying many ships at the same time. One of those streams comes down the hill at the back of the village, and turns two mills near the shore; besides which there is a large fountain among the houses. Supplies also are more easily obtained at Rhoda than in Pasha Liman harbour, there being several populous villages in the neighbourhood.†

ANCHORAGES.—A vessel may anchor off the west coast of Artaki peninsula sheltered from N.E. winds, in from 12 to 16 fathoms, within

* See Admiralty chart, Rhoda channel and anchorage, No. 2,242; scale, $m = 1$ inch.

† Remarks on Rhoda channel by Commander T. A. B. Spratt, H.M.S. *Spitfire*, 1853.

hail of the shore, but she should be on her guard against the violent gusts which came off when abreast of the ravines. If forced to seek shelter under the peninsula, she should endeavour to anchor at Artaki or at the head of the bay.

The first anchorage met with after passing Rhoda, is abreast of the village of Gonia, which lies 5 miles from the east point of Pasha Liman island. A vessel may anchor in 7 to 13 fathoms N.W. of the village.

Artaki or Erdek road.—The anchorage in Artaki road, though open to the S.W., is as safe as it is convenient; * it lies 7 miles S.E. of the east point of Pasha Liman island, and is a mile in length from S.E. to N.W. Its north-west extremity is formed by Zeityn Adasi, a small low island about 200 yards long; there are 10 to 16 feet water in the little channel which separates the islet from the land. At a distance of 2 cables from the south-west point of the islet there is a small sunken rock, having only 3 feet water. Between this rock and Zeityn Adasi there are 5 to 12 fathoms water. The following bearings give the exact position of the rock; the mosque in Artaki N.E., and the middle of the ruins of Palæo Kastro S.E. by E. $\frac{1}{2}$ E. It is therefore requisite, in running for the anchorage of Artaki, either to keep close to the south-west point of this island, or to give it a berth of more than 3 cables, hauling to the wind when the mosque of the town bears N. by E.

The south point of this little bay is formed by a strip of low land, on which are seen the ruins of an old castle named Palæo Kastro, and it is between them and the islet that the commodious anchorage of Artaki is formed.

A vessel may anchor in almost any part of Artaki road to the south of the town in 7 to 9 fathoms, the best berth is with the mosque bearing N. $\frac{1}{2}$ W., the point of Zeityn Adasi N.W., and the west point of Paganus island S.S.W. $\frac{3}{4}$ W.

Town.—The town of Artaki lies on the north point of the bay, and is the largest of any in the peninsula. It is built on the ruins of ancient Artace, and is traversed by a little river which runs into the harbour. Water and provisions of all kinds may be procured, also a white wine which is much esteemed.

Paganus or Simon island is situated 5 cables S.W. from the peninsula of Palæo Kastro. In the channel between this island and the peninsula about $1\frac{1}{2}$ cables from the shore of the peninsula lies a little rock on which there are only 13 feet water, but in the other parts of the channel there are 10 to 20 fathoms water.

Artaki bay.—If from bad weather or other circumstances a vessel should not be able to anchor off Artaki, she should not hesitate in running

* See plan of Artaki or Erdek road on Admiralty chart, No. 224.

to Artaki bay, the eastern part of Artaki gulf, where a good anchorage will be found in 10 to 17 fathoms, and sheltered from all winds except those from the S.W., which hardly ever blow home. This anchorage being extensive affords every convenience for getting underway, and the working room necessary for a large ship; moreover, southerly winds seldom come on to blow suddenly.*

In steering for this eastern anchorage pass either north or south of Puganus island, which may be kept close on board, only taking care to avoid the 13-foot rock already mentioned.

The currents in Artaki bay are weak, and set from west to east along the north shore, returning back to the west along the south shore.

Supplies.—The bay is full of fish, which are also plentiful round the whole of the peninsula; and fresh provisions may be had in abundance, either at the villages of Koukourou, Injik, or Artaki.

MARMARA GROUP OF ISLANDS.

The Marmara group (ancient Ophiussæ) consists of five islands, situated West and N.W. of the peninsula of Artaki.

PASHA LIMAN, the southernmost of the group, is separated from Pasha Liman island by Rhoda channel already mentioned. The island is 4 miles in breadth from east to west, and nearly 6 miles in length from north to south; it is 500 to 700 feet high, and its form is that of a cross, between each of the branches of which there is a little bay, the one alone to the N.W. being of importance, as it forms with Avori island, which lies to the N.W., a secure harbour of refuge in bad weather. Two small rocks may be seen at the west point of this island, and three more off the north-east point.

Kuyun Adasi or Avori island extends parallel to the west side of Pasha Liman, from which it is distant only half a mile. The island is 2 miles long north and south, half a mile broad, and rocky. Off its south-east point two small rocks and a mud bank extend about 4 cables; a small island, named Mamalia or Panaya, lies close to the north point of Kuyun Adasi.

PASHA LIMAN HARBOUR.—The space between Kuyun Adasi island and Pasha Liman islands forms Pasha Liman harbour, which is completely sheltered from all winds. It is three-quarters of a mile in breadth from west to east and 2 miles in length from north to south; in its northern part there are 10 to 14 fathoms water on a mud bottom, and 5 to 9 fathoms at its southern end, where lies a dangerous bank, on which there are only 5 feet water. The bay in the south part of Pasha Liman harbour is filled by a shoal and rocky bank which extends 3 cables from the shore.†

* See plan of Artaki isthmus on Admiralty chart, No. 224.

† See plan of Pasha Liman harbour and Kutali road on chart, No. 224.

Vessels from the eastward, bound for this anchorage, should steer for the north point of Pasha Liman, to which give a berth of 3 cables, to avoid the 10-foot bank at its north-west extremity. Those from the westward should, after opening the harbour, pass near the little island of Mamalia, which is free from danger. The harbour once made out, steer to the southward or nearly for the four mills at the head of the bay; give the north-west point of Pasha Liman a berth of 2 cables, and keep close to the eastern shore of the harbour. Moor north and south abreast the village of Pasha Liman, at 3 cables from the shore, in about 6 fathoms, mud. The island affords very few refreshments; water, however, is to be obtained.*

ARABLAR or RABI ISLAND lies to the westward of Pasha Liman and Avori islands, from which it is separated by a channel a mile in breadth, but with 10 to 18 fathoms water, over sand mixed with mud. The shores of this channel have deep water within a distance of one or 2 cables. There is a depth of 5 fathoms within a distance of one to 3 cables from the west and north sides of Arablar island.

On the north side of the island is the village of Ausia, and on the south-east side Araplar.

Roun rock.—Nearly a mile from the west side of Arablar island lies Roun rock, low and small, and having shoal and rocky ground extending 3 cables to the north-east of it. From the rock the north point of Arablar bears N.E. by E.; the south-west point of Kutali island N. by W. $\frac{1}{4}$ W., and the north-east point N.E. $\frac{1}{4}$ N.

LIGHT.—On Roun rock stands an iron tower, 17 feet high, painted white, which exhibits at an elevation of 49 feet above the level of the sea a *fixed* white light, visible in clear weather from a distance of 10 miles.

KUTALI or EKINNIK ISLAND is the westernmost of the Marmara group, and lies N.W. three-quarters of a mile from Arablar island; it is $2\frac{1}{2}$ miles in length from west to east, and nearly a mile in breadth. Its eastern part curves towards the north point of Arablar, and thus forms a good anchorage sheltered from N.W. and S.E. winds. The south coast of Kutali eastward of the village is bordered by shoals which extend 2 to 5 cables from the shore. A rocky ledge extends $3\frac{1}{2}$ cables to the eastward of the east point of the island.†

The channel which separates Arablar from Kutali is thus much narrowed by the shoals which border either island. At the entrance it is only $4\frac{1}{2}$ cables wide, with a minimum depth of $4\frac{1}{4}$ fathoms in mid channel.

* Pasha harbour is easy of access, very secure, and a good place to remain in during the strong N.E. winds, when bound to the Bosphorus.—*Remarks by Capt. E. Lyons, H.M.S. Blonde, 1830.*

† See plan of Kutali road on Admiralty chart, No. 224.

The best approach to the anchorage is from the south-west, taking care to avoid Roun rock, which has a light, and not approaching the south side of Kutali within 6 cables until the west end of Kutali village bears N. $\frac{1}{2}$ E.

In working in, in bad weather, it will be prudent to guard against the eddy winds which are sometimes dangerous, and do not stand too far in towards Arablar island when to the northward of the village of Ausia, as from thence to the north end of the island dangers extend at least 3 cables from the coast.

Moor N.W. and S.E. in Kutali road, in 10 fathoms, sand and gravel at 5 or 6 cables from the shore, with the west end of the village bearing N. by W.

MARMARA ISLAND (ancient Proconnesus), is named by the Turks Marmor Adassi (Marble island), and gives its name to the whole sea; it is 10 miles in length from west to east, and 6 miles in breadth from north to south; it lies 40 miles E. by N. from Gallipoli lighthouse, 20 miles to the southward of the town of Rodosto, and 5 miles N.W. of the peninsula of Artaki. The island is mountainous, a double chain of high hills extending through it from west to east is frequently seen from Gallipoli, and serve to correct the position of vessels navigating this sea. It is in general very barren, and contains only a few miserable villages and some quarrymen's houses. As its name implies, it is almost entirely composed of marble, the quarries of which the Sultan has had worked, and the marble taken to Constantinople to build palaces. Game, and especially stags, are said to be abundant.

Marmara divides the sea of Marmara into two channels, one formed by the coast of Europe to the north; and the other to the south, by the islands Kutali, Arablar, Pasha Liman, and the peninsula of Artaki. The north channel is 10 miles in breadth, quite free from danger, and used by almost all vessels bound to Constantinople, especially in the finer season of the year.

The south channel is from $2\frac{1}{2}$ to 3 miles in breadth, having a depth of 22 to 33 fathoms, and is preferred by many seamen in winter, as south and S.E. winds are often experienced there, and good anchorages may be obtained in case of bad weather. This channel also is free from danger, with the exception of Lasa rock lying 4 cables from the south-east side of Marmara island, about the size of a capstan, and with only 8 feet water; from the rock the north part of Autoni village and cape Gremilla, the point of black rocks which is to the west of that village, appear in line N.E. $\frac{1}{2}$ E., and St. George monastery chapel bears N.N.W. $\frac{1}{2}$ W. To vessels seeking shelter under the south-eastern coast of Marmara, or running along its shore, this rock is a danger.*

With the exception of Lasa rock mentioned the island is free from danger

* See plan of south-east part of Marmara island on Admiralty chart, No. 224.

all round, there being a great depth of water with but few small rocks, close to the shore, on the north and west coasts ; there is anchorage everywhere on the south coast in 9 to 13 fathoms, mud, but very near the shore. Vessels generally anchor off the town of Marmara, on the south-west side of the island, or abreast of the villages of Prostia and Klazati, but at both these anchorages they are exposed to squalls when the wind is from the northward, and as the water deepens rapidly are liable to drag their anchors. A vessel should in this case, for greater security, make a warp fast on shore.

Town.—The town of Marmara is the principal one on the island. Its houses are built of wood, and its miserable population, like that of all the island, is almost entirely composed of Greeks, who live by fishing and the working of the marble quarries.

AYANSHA or KAIRSIZ ADA is a barren rock of a gray colour, a third of a mile in circumference, and lying to the westward of the north-west point of the island of Marmara, from which it is separated by a channel nearly 2 miles in breadth, with 35 to 43 fathoms water.

Fener Adasi or Fanal, another little rock, lies 6 cables from the east point of that island. Two small rocks lie $1\frac{1}{2}$ cables to the westward of Fener Adasi.

LIGHT.—On Fener Adasi is a white stone quadrangular tower 29 feet high, which exhibits at an elevation of 131 feet above high water a *fixed* white light varied by a *red flash* every *two minutes*. The light should be visible in clear weather from a distance of 12 miles.

MOLA ISLANDS.—The three small islands of St. George, St. Andrew, and Mola or Mexa, compose a small group lying nearly 2 miles to the eastward of Artaki peninsula. The channel between St. Andrew, the westernmost island, and the peninsula has an average depth of 10 fathoms, and may be used by vessels endeavouring to reach the anchorage in Peramo bay with westerly winds, so as not to fall to leeward.*

These islands are small, and occupy the space of about $1\frac{1}{2}$ miles ; the two first have a depth of 6 to 7 fathoms close to them ; but Mola is surrounded by small rocks.

Agri Petra.—A sunken rock, having less than 6 feet water, but with 8 to 9 fathoms round it, lies three-quarters of a mile S.E. $\frac{1}{2}$ S. from Mola.

PERAMO BAY, formed by the peninsula of Artaki and the coast of Anatolia, is 6 miles in length and 3 miles wide. It is open to easterly and N.E. winds, but affords shelter only from westerly or southerly winds, which are not often to be feared in this sea. A vessel wishing to anchor in this bay should steer for the east point of the peninsula, and passing between it and the Mola group run along shore, and anchor either in the

* See plan of Mola islands on Admiralty chart No. 224.

bottom or in the north part of the bay, at about 6 cables from the shore, in 6 to 8 fathoms. In the rest of this fine bay there are 22 to 25 fathoms. The squalls from the mountains should be guarded against.*

Do not stand nearer the low isthmus which separates the two bays than $1\frac{1}{2}$ cables, as a flat having only 5 feet water extends to the eastward.

Peramo bay is far from affording the same resources as that of Artaki. There is, however, on the coast of the peninsula the village of Peramo, off which and very close to the shore a vessel might anchor occasionally in 6 fathoms; and also the town of Panderma or Panorma, on the south side of the bay, $3\frac{1}{2}$ miles to the eastward of the isthmus. Panderma stands facing the east in a charming valley, surrounded by hills covered with vines and beautiful vegetation, and contains about a thousand houses, with a mixed population of Turks, Greeks, and Jews.

The Coast from Panderma extends to the eastward 25 miles to the mouth of the river Mikhalich, and in the part intervening may be seen several poor villages; the shore appears desert and almost unapproachable, affording no shelter from northerly winds which blow right home. There is a depth of from 17 to 21 fathoms close to the beach.

MIKHALICH or MOUALISH (ancient Rhyndacus).—The mouth of this river lies 7 miles to the southward of Kalolimni island; a pillar on the right bank of this river serves to mark its entrance. Like the other rivers on the coast, it is fronted by a flat which extends a mile to seaward, and 7 miles east and west along the shore. At the entrance of the river, which is only navigable by boats, there is about 6 feet; boats go up the river to an island in the lake of Aboulionte, on which is built the town of Kodavenkioi, and which is thought to be ancient Apollonia. The Rhyndacus separated Mysia and Bithynia.

The town of Moualish, which lies at a distance of 9 miles in the interior, on the slope of a wooded mountain, was the most important point of communication between Smyrna and Constantinople before the construction of steam boats. It has nine mosques. The population consists of 3,000 Turks, Greeks, and Armenians.

KALOLIMNI or IMBALY ISLAND (the ancient Besbicus) lies 7 miles to the northward of the mouth of the river Mikhalich, and 22 miles to the eastward of Artaki peninsula: it is 4 miles in length from north to south, and $1\frac{1}{2}$ miles in breadth; moderately high, and with rather a high peak at its northern extremity. Its north and west shores are steep, but a vessel may anchor along the east coast, sheltered from westerly winds, in 6 to 9 fathoms, mud bottom. In approaching this anchorage from the northward, steer for the north-east point of the island, which, with Windmills point

* See plan of Peramo bay on Admiralty chart No. 224.

just to the southward of it, may be rounded close-to; and having passed the last-named point, anchor in a little bay south of Vagnites—a miserable village inhabited by Greeks, built at the foot of the hill—and at 5 or 6 cables from the shore, in 8 fathoms, mud bottom. Do not anchor more than one mile to the southward of the Windmills point, as at a distance of nearly 2 miles in that direction, and at 2 cables from the shore, there lies a rock awash.

The last-mentioned anchorage affords good shelter with the wind between N.W. and S.W., but it is very bad with N. and N.E. winds, which blow home. With strong winds from those quarters, weigh in time, and remove to an anchorage southward of the bank which projects from the south-west point of the island, and on which there are only 10 feet water, over sand and mud. This anchorage is about 2 miles to the southward of the south-west point of the island, in 7 to 9 fathoms, sand and mud, close to the edge of the bank, and pretty well sheltered from northerly winds and surf.

Vagnites is the only village on the island.

The COAST from Mikhalich river trends 18 miles to the eastward towards the town of Mudania, and is thinly inhabited, steep, and open to northerly winds, during which a landing is difficult to effect. At 5 miles to the eastward of Mikhalich river there is a little bay in which a small vessel may anchor in 6 to 8 fathoms, mud, but it is open to all winds from the northward.

MUDANIA BAY.—From Mudania the coast of Anatolia trends to the southward, and then to the N.E. up to the town of Gemlik, which lies 13 miles from Mudania; it then returns in a westerly direction to Boz head; and thus forms between the two coasts a gulf of 20 miles in length from west to east, named Mudania bay, anciently the Cianus Sinus. This great bay or gulf affords very little shelter, the water being very deep along its shores, and westerly winds throw in a heavy swell, while northerly winds raise a short breaking sea; during the latter a vessel may anchor temporarily at 6 cables from the shore, abreast of the villages Katerly and Armudly, which stand on its north coast.

The chain of high mountains which shelter Mudania bay from all winds from the northward, pour down through their hollows furious gusts which render an anchorage along the north coast at that time dangerous. If threatening weather should force a vessel to run for shelter into this bay, it will be prudent to round Boz head under reduced sail, and if the gusts of wind are too heavy off the land to allow her to anchor abreast of the two villages already mentioned, she will be well to windward, and can obtain a more secure anchorage at the bottom of the bay, abreast of the town of Gemlik.

Currents.—The currents, which set from the northward into Mudania bay, run along its north coast from west to east, and then return towards the west along the south shore.

Mudania stands on the south shore of the great bay of that name, and nearly 15 miles to the N.W. of Brusa, of which it may be considered the port during the finer part of the year. It is built on the sea shore, and is composed of about a thousand houses, inhabited by Turks and Greeks; it is surrounded on all sides by high hills well cultivated, and its environs are extremely fertile, being covered with vines and olive trees. A vessel may anchor off the town in from 8 to 10 fathoms, mud, at about 6 cables from the shore; but she will lie uneasily during a northerly swell, as the current runs out of the gulf from east to west along the south shore.

Navigating sub-lieutenant E. J. Fleet, H.M.S. *Antelope*, 1874, remarks that Mudania is difficult to distinguish, but about half a mile to the westward there will be seen a newly made road running round and up the face of a dark hill, at the foot of which are some small cliffs. On nearing Mudania the two villages of Si and Trilia will be seen.

There are a few small poor villages along the coast both east and west of the town.

Gemlik or Kios Road.—The best anchorage at Gemlik, sheltered from all winds, is with the town bearing N.E. by E. and the arsenal S. by E., in $8\frac{1}{2}$ fathoms, mud bottom.

H.M.S. *Antelope* in 1874 anchored off Kuchuk Kumli in 12 fathoms, mud, about 3 cables from the shore, with a solitary white house bearing N. by E., and the southern part of Gemlik town just open of cape Mikel.*

The high lands, which run round the gulf, are covered with pines, and on the plain, the vine, the olive, fig, and dwarf mulberry trees are cultivated; the latter is one of the principal resources of the inhabitants, and supplies the silk trade at Brusa.

Town.—Gemlik (the ancient Cius, but called by the modern Greeks Ghio,) lies at the head of the gulf, in a fertile and well cultivated valley, producing a large quantity of good wine and wheat. The population is almost entirely Greek, and the town contains about 900 houses, the greater portion built of wood. The Turkish government proposed last century to make a building yard at Gemlik, and an arsenal was built, which is still seen to the southward of the town, but, as at Kamir, it has failed. However, frigates of 60 guns have been built here for the Turkish navy, from the oak forests in the neighbourhood of Brusa.

Gemlik is the real port of Brusa, especially in winter, as the good qualities of its anchorage, where there is excellent shelter, and the facility for landing there from steam vessels, give it a great advantage over the open

* See plan of Gemlik or Kios road on Admiralty chart, No. 224.

road of Mudania. But off the point, which lies 3 miles to the westward of the arsenal, and on which may be seen a little village named Tuzla, there is a bank extending half a mile north with only 5 feet water. Between the arsenal and this point there lie some salt pans.

Brusa.—The town of Brusa (ancient Prusa) lies in the interior, nearly 15 miles S.E. of Mudania, 14 miles S.S.W. of Gemlik and only 6 miles N.W. of mount Olympus, the highest summit of Asia Minor, which rises about 6,500 feet above the level of the sea, and is almost always capped with snow. This great city is said to contain 50,000 inhabitants, Turks, Greeks, Jews, and Armenians; the majority, however, being Turkish. It contains 25 mosques, and extends about 2 miles from east to west. Its houses are constructed partly of wood and partly of stone. The streets are narrow and dark, but they are decorated and refreshed by a considerable number of fountains, which distribute water in abundance.

Brusa is seen from a great distance, and its first aspect is magnificent—reposing at the foot of the lofty Mysian Olympus—partly in the theatre form of the hill, and partly stretching along the plain, surrounded by beautiful gardens. On a nearer approach, a stranger is struck with the increasing luxuriancy of the country, and the great fertility of its environs. Springs rise on all sides, the high lands are covered with oaks, and in the plain the olive and every kind of fruit tree, and especially the dwarf mulberries, which are the principal riches of the country, are cultivated.

By landing at Mudania, Brusa or Gemlik may be reached easily in $2\frac{1}{2}$ hours by good roads in fine weather; but in winter the causeway between the two latter is badly kept in repair, which makes the road difficult; besides which it is irregularly laid out, a mountain has to be first cleared, and a little river, called the Asser, crossed twice.

The land between Mudania and Brusa is badly cultivated, probably in consequence of its thin population. Villages are seen, having a good appearance, but they lie far from the road.

The climate being favourable for the training of silk worms, the greater part of the inhabitants are in this trade. In good years at Brusa, the yield of silk is about 3,000,000 okes,* a large part of which is worked up in the town, and exposed for sale in vast and numerous bazaars, established in the style of those at Constantinople: the rest is sent to that city to be exported. The silk stuffs manufactured at Brusa have a wide reputation in the East, where they are in general use; it also exports to Odessa a large quantity of preserved olives. The mineral waters of Brusa are considered very efficacious, and its baths are magnificent. The Christian part of the population at Brusa occupies a separate quarter to the west of the town.

* The oke weighs about $2\frac{3}{4}$ lbs.

Southerly winds are frequent, and sometimes violent: the climate is very warm in summer, but agreeable during the rest of the year, except in November, which is the rainy month.

BOZ BURNU forms the western extremity of the peninsula which separates Mudania bay and the gulf of Ismid; it is an enormous mass of rocky land, without vegetation, and round which there is a great depth of water. A rock nearly awash lies three-quarters of a mile to the northward of the cape and at a quarter of a mile from the shore.* From thence the coast runs 12 miles E.N.E. to cape Kiriaki. Between these two points the coast is formed by high lands and arid rocks, ever beaten by north winds. The current from the Bosphorus sets straight to Boz head.

GULF of ISMID.—From cape Kiriaki the coast runs 20 miles to the eastward to cape Chatal at the south entrance to Ismid gulf, and continuing the same general direction for 25 miles farther to the town of Ismid, it then turns back to the westward for 30 miles to Elken Kaya, or cape Bianco; thus forming the gulf of Ismid or Nicomedia (ancient Astacenus Sinus), of 30 miles in length from west to east, with a breadth varying from one to 6 miles. The gulf is sheltered from all winds, except those from the westward, which rarely blow home.†

The two sides of the gulf are sinuous, and by approaching each other in two places, they divide the gulf into three bays, all of which would make good roadsteads were it not for the great depth of water. The coasts are picturesque, and studded with numerous villages, yet the interior appears badly cultivated. It is in a cypress wood near the village of Guibezeh, which lies 6 miles to the N.E. of cape Elken Kaya or Bianco, that repose the ashes of Hannibal, who is supposed to have died at Nicomedia (Ismid).

A vessel in entering the gulf should give Dil point a berth of at least three-quarters of a mile as it is skirted by a shoal bank which extends northward and eastward of the point half a mile. But in fine weather the bank can easily be seen by the eye.‡ When nearing the second passage between Kileri and Youuk points, keep nearer to the south shore, to avoid the bank extending off Kileri point, on which there is but 6 feet water; and as soon as that point is passed, keep near the middle of the passage, but closer to the north shore.

* According to some authorities the shore of Boz Burnu is perfectly clean. Also H.M.S. *Antelope* passed Boz Burnu on two occasions in June 1874, once at a mile distant, and on the other close to; but on both occasions saw nothing of the rock. A good berth, however, should be given to the point until the locality has been properly examined.

† See plan of gulf of Ismid on Admiralty chart, No. 224.

‡ Commander C. Hotham and Navigating Sub-lieutenant T. H. B. Snell, H.M.S. *Jaseur*, 1870.

LIGHTS.—From a mast on a white house situated on Dil point, south side of Ismid gulf, is exhibited a *fixed green* light, elevated 40 feet above high water and visible in clear weather a distance of 5 miles. The light is 270 yards from the extremity of the point.

Also, from a mast on a white house situated on Zeitin Burnu is exhibited a *fixed red* light, elevated 33 feet above high water and visible in clear weather from a distance of 5 miles.

Anchorage.—A vessel may anchor along the coasts very near the shore, abreast of the numerous villages, in depths which vary from 10 to 28 fathoms.

H.M.S. *Jaseur*, in October 1870, anchored off Kavak Iskelesi, about 4 miles to the south-east of Dil Burnu, in 15 fathoms, mud. Although a short chopping sea entered with a north-easterly wind, the holding ground was found to be good. The shore is steep-to, there being 4 fathoms within half a cable of the shore. The water obtained from the fountain near the beach at the top of the pier is excellent.

The best anchorage is in the bay at the east end of the gulf, to the southward of the town of Ismid, in 7 to 11 fathoms, mud, sheltered from all winds.

Navigating sub-lieutenant T. H. B. Snell, R.N., remarked in 1870 that the water at the head of Ismid gulf had shoaled considerably since the date of the last survey, 1848, especially near the mouths of the two streams south of the town of Ismid; there being a depth of 3 feet where there was 2 fathoms formerly.

The town of Ismid is built on the site of the ancient Nicomedia, and gives its name to the gulf. Its houses are built of wood, surrounded by gardens; the population is about 3,500 inhabitants, a considerable reduction on former numbers. Earthquakes have often destroyed it, but its advantageous situation has caused it to be rebuilt.

Its trade with Constantinople is chiefly in wine, cotton, and silk. Pottery is manufactured; and the greater part of the boats or craft which navigate the sea of Marmara are built there.

Fish in considerable quantities may be caught by the seine on the beach in front of the arsenal; permission of the senior naval officer should first be obtained. Beef and vegetables of good quality may be obtained, and abundance of wild fowl and game may be shot in the winter.

Cape Elken Kaya (Yeldem point, or Cape Bianco) the north-west extreme of the gulf of Ismid, is of a grayish colour, rather high, and on its summit may be seen the village of Derjdja.

CAPE TUZLA.—At this cape the coast changes its direction, and trends 6 miles N.W. by N. to Tuzla point, which extends 2 miles to the westward, forming to the southward a large bay, in which there is anchorage in 7 to 9

fathoms, broken shells and mud ; this anchorage is sheltered from N.W. and all easterly winds round to S.E.

A vessel may anchor at $1\frac{1}{2}$ miles to the S.W. of the village of Tuzla, which lies on the north shore of the bay, but not farther to the north, as the water shoals rapidly.

Cape Tuzla is low, and at 2 cables from its south-west extremity there are three small barren islands which are steep-to. There are also salt pans on the strip of low land which forms the point.

ANCHORAGES.—From cape Tuzla, the coast, after making an elbow 2 miles to the N.E., returns again to the N.W. for 13 miles to Fanar point. All this part of the coast is well cultivated, and the villages of Yos-Yori, Pendyk, Kartal, and Maltepeh are seen, abreast of each of which a vessel may anchor at 5 or 6 cables from the shore, in 6 to 8 fathoms. There is also good anchorage between Fanar point and Proti island.*

Vorthonas and Kutourla islets.—In the vicinity of Maltepeh village a sandy flat extends $1\frac{1}{4}$ miles off the shore towards Proti island, on which lie four clusters of rocks 3 to 12 feet above water, and around which the ground is foul. Those near its extreme, named Vorthonas and Kutourla, are 3 feet high, and lie in mid-channel between Proti and Maltepeh. The north cluster, named the Column, is 12 feet high, and rises from its western edge N. $\frac{1}{4}$ E., $1\frac{1}{4}$ miles from Vorthonas, and three-quarters of a mile from the shore ; and the middle cluster, Rokka, is 5 feet high, and lies S.E. $\frac{1}{2}$ S. half a mile from the Column. There are 5 fathoms on the outer edge of this flat, and $3\frac{1}{2}$ fathoms in the channel between the rocks and the shore.

Between Tuzla and Fanar points the current sets slowly to the northward along the coast.

Towards the N.E., from this part of the coast, two high mountains are seen ; one named the Brothers is used as a mark when standing for the entrance of the Bosphorus ; the other, named Maltepeh, lies 5 miles N.W. of the Brothers, and also serves as a landmark in the Bosphorus, in the sea of Marmara, and in the Black sea, from all of which it is 12 or 15 miles distant.

FANAR POINT is of moderate height, projecting to the westward half a mile. It lies S.E. $\frac{1}{2}$ S., 3 miles from the lighthouse on Seraglio point. At a cable S.W. of Fanar point there is a small island, with foul ground between it and the shore. Irregular depths of 9 to 24 feet, rocky bottom, will be found within a cable on all sides of the islet. Between Fanar point and its adjacent island there is a passage for vessels drawing not more than 6 feet.†

* See Admiralty chart, Princes island (and the adjacent coast), No. 2,286 ; scale, $m = 2\frac{1}{2}$ inches.

† Navigating Lieutenant H. F. Woods, H.M.S. *Antelope*, 1867.

LIGHT.—On Fanar point stands a circular white stone tower, 33 feet high, which exhibits, at an elevation of 59 feet above the sea, a *fixed* white light, visible in clear weather from a distance of 10 miles.

FANAR BAY.—From Fanar point the coast trends to the eastward, forming a small indent called Fanar bay, in which there are 5 to 6 fathoms, mud. Its south-east shore is rocky, the interior gradually shoals to the eastern beach, and from the north-west point a tongue extends a mile S. by W., with a uniform depth of 3 to $3\frac{1}{2}$ fathoms.

This shoal is named Fanar bank, and between it and Fanar point there is a channel with 7 fathoms leading into Fanar bay. The Sultan's palace, bearing N. $\frac{1}{2}$ W., open of Leander tower, leads to the westward of Fanar bank.

The Coast from cape Moda, the north point of Fanar bay, trends nearly north 3 miles to the north point of Skutari. Between these two places are seen the village of Kadi Keui and the large barrack south of Skutari. It is bordered by a sand flat, extending one to 4 cables from the shore, on the outer edge of which there is a depth of 5 fathoms.

ANCHORAGE.—There is good anchorage between Kadi Keui and Skutari barrack, at 2 to 5 cables from the shore, in $3\frac{1}{2}$ to 10 fathoms, mud; but if a vessel should be obliged to anchor farther to the northward, near Leander tower, she must anchor at less than 3 cables from the shore, in about 5 fathoms, just inside of an imaginary line passing through Leander tower and the summer palace of the Sultan at Beshik Tash, taking care not to come within that distance, as the flat has several irregular patches of rock and sand on it. In these anchorages there is no sea with northerly winds, and a vessel will lie sheltered from the currents of the strait. It is the usual anchorage for vessels which, after having tried to work up the Bosphorus, have been carried to the southward by the violence of the current.*

PRINCES ISLANDS, of which there are nine, take their name from Prinkipo, the largest island of the group, and lie parallel to the coast of Asia, between the mouth of the Bosphorus and the entrance to the gulf of Ismid. This group has a general direction from N.W. to S.E., and forms, with the coast of Asia, a channel $1\frac{1}{2}$ to 3 miles in breadth, and 6 miles in length, in which there are from 8 to 20 fathoms water; but abreast Proti island there is an extensive flat running from the mainland, with four small clusters of rocks, the outer one of which (Vorthonas) lies near the south-west extremity of the flat. See page 65. A vessel should, in passing between the islands and the main, give a wide berth to Prinkipo, bearing in mind that from cape Drako a tongue having 5 fathoms water on its

* See Admiralty chart, the Bosphorus, No. 1,198; scale, $m = 2$ inches.

extremity extends 4 cables to the southward, and then steer towards Kalki and Proti, where there is a good depth of water.*

Prinkipo island is the largest of the group, and is celebrated for its fine climate. It lies 10 miles S.S.E. from Seraglio point; and its length from north to south is $2\frac{1}{4}$ miles, by a mile in breadth. Its north point is bordered by a bank of gravel and sand extending 6 cables to the northward towards cape Drako, and 3 cables to the westward towards Kalki island, and having 2 to 5 fathoms on its outer edge. Peta hill open north of Kalki island, and bearing W. $\frac{1}{4}$ N., leads to the northward of the spit. A depth of 5 fathoms will be found within about a cable from the other parts of the island.

The island is well cultivated, and has a fine promenade planted with trees near the mole, which extends from the town at the north extremity of the island; and the town consists of six or seven hundred well-built houses. Water in small quantities may be obtained from the well in a bay on the west side of the island. Near the well there is a steam mill for grinding corn.

The rich Greek and European merchants of Constantinople have handsome villas erected at Prinkipo, which they reach by means of a small steam-boat running regularly from Constantinople; and the Turkish Government is said to have also established a polytechnic school there.

Andiro Vitha island lies 6 cables to the eastward of Prinkipo. The narrow channel which separates them is deep, having 17 to 45 fathoms water in it.

Niandro island, about 2 cables long, lies a mile to the southward of Prinkipo; the channel which separates them is also deep, having 45 fathoms in it. This island abounds with rabbits.

Kalki or Halki island lies 6 cables N.W. of Prinkipo. The intervening channel is much narrowed by the shallow banks which extend from either island. These form a passage 2 cables wide in which there is a depth of 5 to 7 fathoms, sand and mud, and which is too shallow for large ships to run through before a heavy sea. The island is a mile in breadth, and $1\frac{1}{2}$ miles in length, and takes its name from the copper mine of Kalkity, which was in great renown with the ancients. It is well cultivated, has two monasteries, and a Turkish naval school, the latter situated on the east side of the island.

On the south part of Kalki there is a pretty little bay named Cham Liman, 5 cables in circumference, in which there are from 6 to 17 fathoms water, but it is open to southerly winds; a vessel, if moored, would lie securely in it with the wind from the northward and eastward.

Antigona island lies 3 cables to the westward of Kalki, from which it is separated by a narrow channel having 6 to 15 fathoms, over sand and

* See Admiralty chart, Princes islands, No. 2,286; scale, $m = 2\frac{1}{4}$ inches.

mud. It is sterile, but is inhabited by a few Greek families, who occupy a poor village lying on the eastern shore, from which a bank stretches N.E. 4 cables, thus encircling the small island of Peta. There is, however, between Peta and Antigona a narrow channel with 4 to 7 fathoms water.

Proti island lies nearly a mile N. by W. of Antigona, and is hilly and sterile; in the channel which separates the two islands there are from 15 to 21 fathoms mud. This, the northernmost of Princes group, is inhabited by a few Greek families, who have a miserable village on its eastern shore.

Anchorage.—There is good anchorage to the northward of Proti, between that island and Fanar point, in regular soundings from 13 to 18 fathoms, mud and sand. Sir J. Duckworth's squadron, in 1807, anchored about 2 miles to the northward of this island.

Captain Spratt, R.N., remarks that there is good anchorage for several large ships on the eastern sides of Kalki, Peta, and Proti, there being deep water within a cable of the islands, and fair holding ground in 10 to 17 fathoms, mud intermixed with shells and coral, at 3 cables distant. The best berth is between Peta and Kalki, as a position may be taken sheltered from W. and W.N.W. winds, which the inhabitants say are the most to be feared, as they bring in a heavy swell through the channel between Antigona and Proti. In winter, ships should not lie too much open to this channel, but moor as close to the east coast of Peta as practicable; the anchors being placed parallel to the shore, with necessary room for riding out the heavy gales which sometimes come from the S.E., and which are the general commencement of a rotary storm.

Water.—There is no fresh water to be procured from any of Princes islands, for although there are several large wells, all are required for their own large population; and the only watering place near them during the dry season is at a spring half a mile to the eastward of Pendyk village, on the opposite coast, which rises on a sloping plain about a cable from the sea, and 40 or 50 feet above it. This stream waters several gardens adjacent, but may at any time be turned so as to flow to the edge of the cliff. About 50 tons or more per day of excellent water may thus be procured in the driest season. Off Pendyk there is good anchorage in from 8 to 12 fathoms.

Oxia and Plati.—The two last islands are Oxia and Plati, detached from and to the westward of the general group; they lie 3 miles to the south-west of Proti, and 5 miles W. by N. of Prinkipo. They are small, and lie nearly a mile N.W. and S.E. from each other, with a depth of 30 to 35 fathoms in the channel which separates them. The shores are rocky, with 5 to 15 fathoms close to them, and there are 40 fathoms between them and the principal group.

Current.—The current generally sets to the S.W. in all the channels which Princes islands form with each other, but it then turns and sets slowly to the N.W. near the shore, between Tuzla and Fanar points.

EUROPEAN COAST OF THE SEA OF MARMARA.

Continuing our description of the European coast from p. 35 :—

DOHAN ASLAN POINT, 9 miles to the eastward of Eski Fanar Burnu, shows as yellow sloping cliffs, 95 feet high; it projects so little that, unless very close in, it does not appear as a point. On the rising ground above Dohan Aslan point is a large white farm, and farther inland, and higher, is a remarkable conical mound, 66 feet high, standing on a spur of the Megarislik hills. This, supposed to be the tumulus of Lysimachus, is known by the Turks as Mal Tépé, and is an excellent mark for identifying the point.

Shoal.—Off Dohan Aslan point is a bank of sand and rock called Dohan Aslan bank, the rounded extremity of which is 6 cables from the shore. Here there is a depth of 3 fathoms, with 4 and 5 fathoms immediately outside; the water then deepens very gradually to 20 fathoms at 3 miles distant.

The shoalest part of the bank is $5\frac{1}{2}$ cables from the shore, and has but 9 feet. The remains of a large iron steam vessel wrecked in 1853 lay imbedded in the sand in 1872. There is a 3-fathom channel used by the coasters inshore of the wreck, but it is obstructed by a shoal head of 10 feet. The tumulus of Lysimachus bearing N. $\frac{1}{2}$ W. leads on to this patch. Gallipoli point, in line with the notch between Ak Yarlar (known by its white cliffs) and the next summit to the left bearing S.W. by W. $\frac{1}{2}$ W. leads clear of Dohan Aslan bank in 8 fathoms.

Buoy.—The outer edge of Dohan Aslan bank is marked by a red buoy in 8 fathoms, with the tumulus of Lysimachus bearing N. $\frac{1}{2}$ W., and Dohan Aslan point N. by E. $\frac{1}{2}$ E. a mile distant.

Boulair is a large Turkish village on the north side of the Karaïokous range; it cannot be seen from the sea; the summit of its minarets only may be discerned from a considerable distance to the eastward.

DOHAN ASLAN BAY.—Beyond Dohan Aslan point the coast extends N.E., and curving round to east, forms a long shallow bay to Injeh point, $7\frac{1}{2}$ miles distant. This bay is free from danger. Dohan Aslan bank soon turns into the shore, and the 3-fathoms line is then nowhere more than $3\frac{1}{2}$ cables distant from it. The shore is sandy, backed by low clay cliffs, similar to Dohan Aslan to the west, but soon becoming low, and in some parts swampy, to the eastward.

At the back the hill of Megarislik drops to the eastward. On its east

spur is the village of Examile, of which a few mills only are seen from the sea.

CAPE INJEH or INJEH BURNU forms a cliff 30 feet high facing the sea, and gently rises inshore to the west end of the Halva Tépé range, which commences here and extends along the back-ground of the coast to the eastward till behind the village of Heraclitza it culminates in the peak of Ay' Elia (Agia Elias) 2,250 feet high.

Off Injeh Burnu is a bank of rock and sand with 4 fathoms on it, extending three-quarters of a mile. A shoal head of $3\frac{1}{4}$ fathoms lies with the point bearing N.E. by N.

Anchorage.—There is good anchorage a mile to the westward of Injeh Burnu, in 8 fathoms, with the point bearing E.N.E.

Beyond Injeh Burnu the land trends N.E. by N. for 3 miles, curving round to east for 4 miles further, to Sarkioi. This part of the coast is free from dangers, and can be approached to a distance of 2 cables. The land rises from the coast sometimes with low cliffs, sometimes gradually, to the Halva range inland. The low lands at the foot of the hills all along this part of the coast are subject to inundations, particularly in the summer.

The village of Keziljadéré is seen on this rising ground $1\frac{1}{2}$ miles inland.

Sarkioi (or Peristasi, as it is called by the Greeks) is a large village on the sea-shore, standing low on the plain at the foot of Arapli Tépé. It has two mosques and three Greek churches, and contains about 5,000 inhabitants, chiefly Greeks.

Water.—There is a small wooden pier at the centre of the village, where there is a fountain of good water.

Supplies.—The surrounding country is well cultivated, and produces grain of all sorts, cotton, silk, tobacco, and wine.

Anchoage.—The anchorage of Sarkioi is not good; there is good holding ground, but no protection from prevailing winds; the bank that borders the shore for $1\frac{1}{2}$ cables falls suddenly into deep water. The best berth is in 16 fathoms about $2\frac{1}{2}$ cables from the shore.

HERACLITZA POINT, $3\frac{1}{2}$ miles to the eastward of Sarkioi, forms the south point of a bay which lies to the eastward of it, is half a mile broad, and in which is the village of the same name. The point is broad, low and sandy, and off it the shoal bank extends $2\frac{1}{2}$ cables. In-shore from Heraclitza point, the country is level for about half a mile, when Arapli Tépé rises abruptly. On this hill is the village of the same name, conspicuously placed.

To clear Heraclitza point, Hora light, distant $7\frac{1}{2}$ miles, should not be brought to bear to the eastward of N.E. $\frac{1}{2}$ E. The light can be seen over the intervening land. Caution is therefore necessary. Wrecks frequently occur in this locality. See remarks on currents at p. 77.

Beyond Heraclitza point the coast continues in a N.E. by E. $\frac{1}{2}$ E. direction for about $7\frac{1}{2}$ miles to Hora point, steep-to with no danger.

LIGHT.—At Hora (named also Khoraz) is a white tower, 50 feet high, and 181 feet above the sea, exhibiting a *fixed* white light with a *flash* every *half minute*. The light should be visible in clear weather from a distance of 22 miles.

From Hora the coast, trending N.E. 19 miles to the bay of Rodosto, is steep, and formed by high, rocky mountains, which in fine evenings throw their shadow over the sea to a great distance. The village of Ganos is seen singularly built on the side of a very high peak; also the villages of Vlemakdere, Kum Bagy, and lastly Bonados, 4 miles to the southward of Rodosto: the depth of water is 16 to 35 fathoms along this part of the coast.

Caution.—Easterly winds blow home here, and with northerly winds the squalls from the hollows are strong enough to dismast a vessel, if caught by them unguardedly.

Anchorage.—There is temporary anchorage abreast of Hora and Ganos, in about 14 fathoms, mud, at 4 to 5 cables from the shore, with westerly winds.

Rodosto.—The town of Rodosto, called by Turks Teker-Dag, lies in a bay. It contains about 40,000 inhabitants, of which a quarter is supposed to be Greeks, an eighth Armenians, and the remainder Turks. It appears to be a place of much commerce, from the activity displayed in its bazaars, established, like those of Smyrna and Constantinople, in streets that are narrow and badly paved. It is built in the form of a theatre on a high hill, and is traversed by small wooden bridges, which are thrown across the watercourses that run down the hill.

A vessel may anchor off Rodosto in from 4 to 7 fathoms, mud and broken shells, and be quite sheltered from north-west and south-west winds.* The Russians took Rodosto in 1829.

The Coast from Rodosto trends 17 miles to the eastward, towards cape Karga, forming between them a long bay of no great depth, in which vessels may anchor during northerly winds in from 6 to 9 fathoms, mud.

CAPE KARGA is the western extremity of a peninsula which projects a little to the southward, and is 4 miles in breadth from east to west. On its eastern point lies the village and harbour of Erekli.

Two rocks awash lie to the east and west of the extremity of cape Karga. The first, named Turkata, bears W. by N. $\frac{1}{4}$ N. $1\frac{1}{2}$ miles from cape Karga, and 4 cables from the shore. The other, named Venetica, bears E. by S. $\frac{1}{4}$ S.

* See plan of Rodosto road on Admiralty chart No. 224; scale, $m = 1$ inch.

three-quarters of a mile from the point, and at the same distance from the shore. In passing these rocks, give the shore a berth of 6 or 7 cables.

In northerly winds a vessel can anchor under cape Karga in about 13 fathoms, mud, at half a mile off shore.

EREKLI BAY.—Erekli was formerly a considerable town, but is now only a poor village, built by the side of the ruins of ancient Heraclea. Its port is large, of a semicircular form, and lies off the east point of the headland of Karga, protected from all winds but those from the eastward; there are $4\frac{1}{4}$ fathoms, mud bottom, in the centre, and $7\frac{1}{2}$ fathoms at the entrance of the port.*

There are still to be seen to the north of the village the ruins of the amphitheatre and the palace built by Vespasian; also remains of walls, and three tumuli, which serve as leading marks for entering the harbour during the day. The environs are in general arid and without cultivation.

LIGHT.—On the west point of the coast south of Erekli bay is a white tower, 17 feet high, which exhibits at an elevation of 164 feet above the sea, a *fixed* white light, visible in clear weather from a distance of 18 miles.

The Coast at Erekli turns to the northward nearly at right angles for 6 miles, and then continues its eastern direction for 27 miles to Baba Burnu, forming between these two points a wide bay, 6 miles in depth, in which the anchorage is good.

Anchorage.—A vessel may anchor off the villages of Sultan-Chifik, Eski-Erekli, Papazly, Silivri, and Pivatos, in 8 to 10 fathoms, mud and shells, at a short distance from the shore. All this part of the coast is badly cultivated, and the villages named are of little importance.

Silivri (ancient Selymbria) was formerly a large town, having a grain market, and a harbour, with which there was a considerable trade.† There are still some fine Roman ruins to be found, and amongst others thirty-five arches of a Roman bridge, a quarter of a mile in length, and also the remains of a wall, standing on a high rock which projects towards the sea.

Pivatos or Boados.—At 6 cables eastward of Pivatos and a quarter of a mile from the shore lies a sunken rock having a depth of 4 feet.‡

BUYÚK CHEKMÉJEH.—Baba Burnu is the western limit of a large circular bay, named Buyúk Chekméjeh (Little Bridge), which is about $2\frac{1}{2}$ miles deep and $2\frac{1}{4}$ miles wide, and affords excellent and safe anchorage in all seasons to vessels having good ground tackling. The

* See plan of Erekli bay on Admiralty chart No. 224; scale, $m = 2$ inches.

† See plan of Silivri road on Admiralty chart No. 224; scale, $m = 1$ inch.

‡ See plan of Pivatos or Boados on Admiralty chart No. 224; scale, $m = 1$ inch.

entrance is open from S. by E. to S.W., from which quarter gales are said to be of short duration in sea of Marmara; and the wind constantly veering sends no swell home to endanger a well found vessel.*

A reef extends nearly 4 cables from Chifút Burún, the south-east point of the bay. To clear the reef, keep the foot of a conspicuous peaked hill, named Azrathena, which rises within the north-western corner of the bay, in line with the western extreme of four arched bridges, which are connected, and may be seen extending from the village of Buyúk Chekméjeh; this village stands on the north-eastern shore, across the lowland at the head of the bay.

The depths decrease gradually from 20 fathoms water between the headlands of the bay, to 5 and 6 fathoms at its upper part, about half a mile from the shore, the bottom throughout being stiff mud and good holding ground. In turning to windward, do not stand towards either shore into less than 7 fathoms water.

The best anchorage is in 6 fathoms, with the Greek town of Kalikratia or Kalierachi, which stands on the west side of the bay, bearing N.W., distant $4\frac{1}{2}$ cables, and the eastern minaret of Buyúk Chekméjeh bearing N.E. by N. This will keep the vessel clear of a broad bank or shoal having a depth of 3 fathoms, which extends nearly 4 cables from the cliffy point upon which the town of Kalikratia is built. Small knolls of ballast, having only 14 or 15 feet of water over them, rise from this bank.

There is a fountain of good water on the beach at Kalikratia, which runs all the year, and is sufficient for the requirements of several vessels; and for the convenience of loading boats, three wooden but slightly constructed piers extend from the town into $4\frac{1}{2}$ feet water. Grain, cattle, and forage are the chief produce of the neighbourhood.

The coast for $2\frac{1}{2}$ miles to the S.E. of Chifút Burún under the bluff headland of Kaldyrim Burnú (on the eastern side of which and close to the shore stands a water mill), must not be approached nearer than 4 cables, or into less than 7 fathoms water; but the depths decrease so suddenly as to be a bad guide for vessels with much speed approaching the bluff. A reef extends about 4 cables from the white point on the eastern side of the water mill.†

KUCHUK CHEKMÉJEH.—The port of Kuchuk Chekméjeh is nearly as extensive as that of Buyúk Chekméjeh; but it is almost filled up, and its entrance is nearly closed by a mud bank extending across its mouth from west to east.

* See Admiralty chart, Buyúk Chekméjeh bay, No. 2,401, scale, $m = 3$ inches. Also plan on Admiralty chart No. 224; scale, $m = 1$ inch.

† Remarks on Buyúk Chekméjeh, by Captain T. A. B. Spratt, H.M.S. *Spitfire*, March 1855.

The two ports of Buyík and Kuchuk Chekméjeh communicate with two large lakes, which are now almost separated from the sea by the accumulation of mud, but over which long wooden bridges have been built to keep up the traffic along the coast, and which may be seen from a position seaward. These lakes formerly were in all probability small gulfs of the sea. Fish are plentiful in them.

If necessary, vessels may anchor between these two ports, sheltered from northerly winds in 7 to 9 fathoms, at 5 cables from the shore; and abreast of Kuchuk Chekméjeh in about 9 fathoms, mud bottom.

STEPHANO POINT.—From the entrance of Kuchuk Chekméjeh the coast runs S.E. $\frac{3}{4}$ E. $3\frac{1}{2}$ miles to Stephano point, which is 7 miles from the entrance of the Bosphorus. By its projection of 2 miles to the southward it completely conceals Constantinople from a vessel approaching from the westward. Vessels bound to Constantinople during the day generally make the land at this point, which is rather low, of a red colour, and may be distinguished by a large inn and several houses, painted red. It is surrounded by a sand flat, which extends half a mile to the south-east of Stephano point lighthouse. On the outer edge of this flat there is a depth of 5 fathoms, shoaling gradually to the shore.* The west angle of Selimiyyeh barracks in line with the trees on the summit of mount Bulghourlu, bearing E. by N. $\frac{3}{4}$ N., clears Stephano point shoal and Seraglio point shoal.

A little to the westward of Stephano point lies the village of Ismana or Stephano, near which the Sultan has a fine palace.

LIGHT.—On Stephano point is a white stone tower, 63 feet high, which exhibits at an elevation of 77 feet above the sea a *fixed* white light, showing a white *flash every two minutes*. The light is [visible seaward between the bearings of E. by N. $\frac{1}{2}$ N. and W. $\frac{1}{8}$ S., and in clear weather should be seen from a distance of 14 miles.

Marmara Tower.—At $4\frac{1}{2}$ miles E.N.E. from Stephano point stands the tower of Marmara, also the castle called the Seven Towers, and the beginning of the walls of Constantinople, which extend nearly 3 miles in the same direction, to Seraglio point, at the entrance of the Bosphorus. Between Stephano point and those places the shore is covered with houses and factories, amongst which the Government powder magazine and a square tower are conspicuous objects.

It should be remarked that the bank which begins to the westward of Stephano point follows the direction of the coast as far as Old Seraglio

* This flat was formerly supposed to extend a mile from the shore, but an examination made in 1872 by Commander W. J. L. Wharton, H.M.S. *Shearwater*, showed that it extended only half a mile.

point. At Marmara tower it is a quarter of a mile from the shore, thence gradually diminishing its distance from the shore, but at Seraglio point it again extends seaward a distance of 2 cables.

ANCHORAGE.—There is good anchorage along this part of the coast, from about a mile to the eastward of Stephano point nearly up to Seraglio point, at a mile off the shore, in from 10 to 13 fathoms, mud; but it is more particularly under the walls of the city, between the Seven Towers and Seraglio point, and close to the shore, that vessels anchor while waiting for a fair wind to enter the Bosphorus. This anchorage is good and sheltered from the strength of the current.

Makri Kioi.—The anchorage abreast Makri Kioi village, which is about $2\frac{1}{2}$ miles to the westward of Marmara tower, and stands between the first and second tall factory chimnies, conspicuous objects on this shore, should only be used in fine weather, as it is much exposed and inconvenient for vessels loading. Shallow water extends a considerable distance from the shore, and no sailing vessel should anchor within $1\frac{1}{2}$ miles of the coast, nor shoal less than 15 or 18 fathoms, mud bottom. This is tolerably safe holding ground, but under that depth the bottom is sand, gravel, and stones. In addition to the inconvenient distance that a vessel is obliged to lie from the shore, so as to be safely anchored on such an exposed part of the coast, there is no wharf at Makri Kioi; the water also is too shallow for laden boats to approach close to the beach, and embarkation and disembarkation would be quite impossible with the swell which must frequently occur with southerly and westerly winds.*

SERAGLIO POINT is surrounded by a mud bank which deepens gradually from 3 feet to 5 fathoms at 2 cables to the southward, and forms a rounded extremity; the bank thence gradually approaches the shore to the northward, which it skirts as far as Old Seraglio point. A vessel, in order to pass round Seraglio point in 4 fathoms, should keep the peak of mount Bulgourlu just open to the southward of the north angle of Skutari barrack, till the great summer palace of Beshik Tash is well open to the eastward of the walls of the Old Seraglio.

There is good anchorage near the south-west edge of the bank which surrounds Seraglio point, but in order to be sheltered from the strength of the current which sets along its eastern side, a vessel should anchor with Leander tower in line with the point of the Old Seraglio, and never open that tower to the eastward of it, as the current would make it difficult to weigh from a berth outside of that bearing.

* Remarks on Makri Kioi anchorage by Captain T. A. B. Spratt, H.M.S. *Spitfire*, 1855.

LIGHT.—At a third of a mile to the north-east of Seraglio point is a white tower, 119 feet high, which exhibits at an elevation of 147 feet above the sea a *fixed* white light, showing a *flash every minute*. The light should be visible in clear weather from a distance of 15 miles.

The mosque of St. Sophia is N.W. by W. $\frac{1}{2}$ W. from the lighthouse.

CURRENTS, WINDS, AND WEATHER.

CURRENTS.—The sea of Marmara is so bounded by the coasts of Europe and Asia, and so connected with the Black sea and the Archipelago, that these two seas have an unceasing influence on its waters.*

The Black sea, lying in the direction of the northerly winds, which blow the greater part of the year, sends into it its snows, fogs, and storms, and the excess of its water; while the Archipelago exercises a more favourable influence, as its numerous elevated islands break the force of S.W. winds and reduce the strength of the current. One may almost know before entering the sea of Marmara what weather to expect there, from what has been already experienced in passing through either the Bosphorus or the Dardanelles.

The currents in the sea of Marmara are produced by the the excess of water that the Black sea constantly pours into it by the Bosphorus; their general direction is, therefore, to the westward towards Gallipoli, but with a few slight variations, owing to its islands and to the sinuosities of its coasts.

The stream on leaving the Bosphorus to enter the sea of Marmara spreads out in the shape of a fan, the left branch setting towards Princes islands, and through their channels, and thence towards the gulf of Ismid, round which it runs from west to east along the north coast, and from east to west along the south coast. Between this current and the coast of Asia, from Skutari point to Tuzla, but close to the shore, there is a narrow zone of back or counter current, which sets towards the Bosphorus.

The central branch takes a southern direction towards Boz Burnu, turns to the eastward along the north coast of Mudania bay, and then again to the westward along its south coast. Lastly, the right branch takes a S.W. direction, but leaving between Seraglio and Stephano points a space where the current is generally weak, and even sometimes forms an eastern eddy or counter-current.

* A fact in connexion with the current of this sea is, that it cannot pour into the Archipelago all the water that it receives from the Black sea by the Bosphorus; the excess being no doubt taken off by evaporation.

In the channel to the northward of Marmara island the current generally sets W. by S., or W.S.W., and according to the observations of Commander W. J. L. Wharton, R.N., its strength is much increased in the vicinity of Hora. "Here," he remarks, "the current runs entirely along the European shore and in the centre, the Asiatic side being protected by the Marmara islands. Its maximum rate at Hora is one knot an hour." Captain Beauchamp Seymour, R.N., H.M.S. *Meteor*, 1856, remarks, "In the winter of 1855, there were numerous wrecks in the sea of Marmara, by far the greater number of these took place on the European shore between Heraclitza and Gallipoli * * * Very few vessels were wrecked on the Asiatic coasts, and this leads me to believe that there is a constant current setting to the N.N.W. between Marmara and Heraclitza." In the lesser channel to the southward of Marmara island, the current sets W. by N.; but also pouring through Rhoda and Kuyun Adasi passages between the islands to the southward, and then to the eastward along the north shore of the great bay of Artaki, round which it sweeps before resuming its westerly course along the south shore towards Gallipoli strait.

The different directions which have been thus ascribed to the Marmara currents must not be taken as absolute on all occasions, but they will be found correct in ordinary weather. It has been said that an eastern eddy is to be found along the north coast of this sea. Such indeed may be perceived off Stephano point when the stream through the Bosphorus first meets the S.W. wind and swell; but no counter-current or eddy will be found to the westward of that point. The general currents, however, are much weakened, and sometimes altogether checked, when the wind has been blowing a long time from the S.W.

In the sea of Marmara it is difficult to ascertain the general rate of the current, as it is governed by so many causes. The stream from the Bosphorus very quickly loses its strength on entering the sea of Marmara, but it always increases with a gale from the N. and N.E., as well as during the heavy rains in winter, when the Black sea sends into it a mass of water much larger than usual. The thaws in April, May, and June, combined with N.E. winds, which are prevalent in that season, tend also to increase the strength of the current. This strength diminishes when violent S.W. winds prevail, the currents are also generally weaker in calm weather, and their average strength in the main channel must not be estimated at more than a mile an hour with a fresh breeze from the N.E., $1\frac{1}{2}$ knots with a strong gale from that quarter, and half a knot in calm weather. In a gale from the N.E. it has been found to set W. by S. one knot, at about 8 miles to the southward of Erekli point.

WINDS and WEATHER.—What has been said of the winds, as well as almost all the observations on the weather, when describing the Dardanelles (*see* pages 38, 39), are applicable to the sea of Marmara: thus N. and N.E. winds are prevalent in this sea almost all the year. In the summer they are clear and moderate, and die away at sunset. In winter they are sometimes very violent and raise a short cross sea, which obliges vessels to seek shelter amongst the islands to the southward, or at Gallipoli, if they have not passed the island of Marmara.

In autumn, and the beginning of spring, south and S.E. winds are frequent, especially along the southern shore: they are often fresh, but always clear, and they render the land very distinct. In winter it is often calm, especially at night in this sea, when there may be every appearance of bad weather, the sky lowering, the night dark, and the barometer very low. It is then probably blowing very hard from the S.W. and west in the Archipelago; but these winds seldom reach the sea of Marmara. S.W. winds, when they do reach this sea in winter, are heavy, and bring rain, but they do not last long. Sometimes the coast of Europe is covered in the morning with a thick mist: in the summer this mist is dissipated by the sun, and is the forerunner of fine weather; but in winter, if it quickly disappears, a gale from the north or N.E. may be expected.

DIRECTIONS FOR PROCEEDING TO THE EASTWARD.

The navigation of the sea of Marmara offers but few difficulties, as the weather will generally be found fine in it. A steam vessel or a sailing vessel with a fair wind on leaving the Dardanelles may from abreast Eski Fanar steer a course, E. by N. $\frac{3}{4}$ N., to clear Heraclitza point. No vessel should try to pass within a mile of the shore, as the dangerous bank of Dohan Aslan, on which many vessels have struck, extends three-quarters of a mile from the land.

By night, when Hora light is sighted, care should be taken when it is approached within 10 miles, not to bring it to the eastward of N.E. $\frac{1}{4}$ E., as Heraclitza point is low and dangerous. See remarks on currents at page 77.

If the wind should blow hard from the N.E. even a fast and powerful steam vessel should not hesitate to close the coast of Europe, where there would be less sea: by doing this, time would be gained and the passage shortened.

Vessels bound to Constantinople during the day generally make the land at Stephano point, which is low and of a red colour and may be distinguished by a large inn and several houses painted red. To vessels

approaching from the westward Constantinople is hidden by Stephano point. Stephano point light is not visible eastward of an E. by N. $\frac{1}{2}$ N. bearing. A vessel therefore keeping within the limits of this light will not approach the land which lies westward of the Stephano point within a distance of 3 miles.

After passing Stephano point, to which a berth of a mile should be given, steer for Seraglio point, but take care to avoid the bank to the southward of it. General directions continued at page 104.

Sailing vessels when past Hora point, instead of steering for Stephano point should keep the northern coast on board, partly to avoid the current, but chiefly, either to be in a position to work up along that coast if the wind should veer to N.E., or to anchor if it should come on to blow hard from that quarter.

If the weather should appear threatening, with the wind N.E., and a vessel has not advanced farther to the eastward than Hora point, she should not hesitate to bear up for Gallipoli; but if as far on as Rodosto, she might anchor on the coast with N. and N.E. winds. If, on the other hand, the wind is more to the eastward, it would be preferable to keep away to the southward, and wait till the gale is over in one of the good anchorages already described.

Vessels engaged in the Black sea trade usually prefer in winter the channel to the southward of Marmara island, because south and S.E. winds are then more frequent, and in case of adverse winds they are close to good anchorages; but in the summer season the north channel is the best. Large vessels in all seasons should keep in the north channel, and in case of bad weather they can easily run for one of the good anchorages to the southward.

A sailing vessel with a foul wind.—Continuing our remarks from page 46 :—

In a fair working breeze a vessel should always keep, on the coast of Europe, to the northward of a line leading from the north point of Marmara island to Gallipoli light.

Dohan Aslan shoal.—A vessel must tack short here, and not approach within a mile of the shore.

Boz banks, off Boz Burnu, should not be approached within three-quarters of a mile; the coast in the vicinity has a steep appearance. A clearing mark has been given for the banks (*see* page 49). Beyond this the shores are free from dangers outside half a mile.

Heraclitza point is dangerous at night, as it is low, and the hills rising at the back mislead the judgment as to distance. Hora light can be seen over Meriophyto point, and many vessels trusting to this have been wrecked on the point. A vessel should tack before Hora light bears N.E. $\frac{1}{2}$ E.

Meriophyto point is of a similar character to Heraclitza, but does not seem so dangerous.

In turning to windward in clear weather between Rodosto and Stephano point, a vessel should keep the coast of Europe well aboard, as often in fine weather the wind will be more northerly in-shore, so as to enable her to make good easting, and she will also find the current there much weaker. In foggy weather, and during the night, a good look-out should be kept when approaching the land, and the lead kept constantly going. Do not shoal less than 17 fathoms water. The vessel will lose sight of Stephano point light when bearing eastward of E. by N. $\frac{1}{2}$ N. and will then be approaching within a distance of 4 miles from the shore. In passing Stephano point give it a berth of a mile.

Caution.—When near the shore it would be prudent to keep a constant look-out from the mast-head, for small banks are constantly forming along this coast; but they are easily perceived by the discoloured bottom during the day, as the water is always clear.

In working along the shore between Stephano and Seraglio points, with the wind from the N.E., there is a great advantage in standing as close in as possible on the starboard tack not only to take advantage of the eddy current, but also because the sea is smooth. A vessel can stand well in to the edge of this bank, which extends 4 cables seaward, and on which there is only 16 feet, by tacking when the trees on the conical mountain of Bulghourlu, which lies 3 miles to the eastward of Skutari, come in line with the west angle of Skutari barrack bearing E. by N. $\frac{3}{4}$ N. This restriction should continue only till abreast of the Seven Towers, when she may stand within 3 cables of the walls, as far as Seraglio point. Here a vessel may if desirable anchor and await a fair wind (*see* page 75), or proceed as directed at page 105.

RETURN VOYAGE.—In running from Constantinople to Gallipoli with a fair wind, the current will always set a vessel to the southward, but it is not easy to prescribe the exact course that ought to be adopted; it must be regulated according to the season of the year or the prevailing winds. Generally speaking, a mid-channel course should be steered between the coast of Europe and Marmara island, and the position of the ship frequently ascertained by the bearings of that island, which may be seen at a great distance, and which ought always to be on the port bow. Between Marmara and Gallipoli the set to the southward will not be very perceptible. See remarks on currents at page 77.

CHAPTER IV.

THE BOSPORUS OR BOSPHORUS.

Variation in 1877 - - 4° 30' W.

THE Bosphorus may be said to begin at Seraglio point on the European shore side, and the town of Skutari on the Asiatic shore, and to terminate at the entrance of the Black sea at the two capes, on which are built the lighthouses of Roumili and Anatoli. Its length from the sea of Marmara to the Black sea, including its numerous windings, is about 17 miles, the breadth varies from 4 cables to $1\frac{1}{2}$ miles, and the general direction is S.S.W. and N.N.E. Like the Dardanelles, it resembles a river with abrupt and angular windings, the projecting points of which break the impetuosity of its stream, quiet its surface, and afford shelter under their lee; the eastern part of the Bosphorus, however, from Buyuk-déré to the Black sea is straight, and its general direction is N.E. The depths in the stream is from 20 to 66 fathoms, over a mud bottom.

Both its shores are studded with magnificent palaces or painted houses, lightly built, and in a quaint and picturesque architecture. The European side is covered with them in its entire length, but on the Asiatic shore they are separated by rather longer intervals of space, and are everywhere backed by hills, whose rich vegetation admirably fills up this noble spectacle.

At Old Seraglio point the port of Constantinople opens out, the water ploughed in all directions by steam vessels, and by thousands of caiques skimming over it, as light as they are elegant. On its south shore the city of Constantinople, and on its north shore stand the towns of Top-khaus, Galata, and Pera, which lie close to each other, and appear as one, being built on the same hill.

On both sides of the Bosphorus are numerous fortifications built by French engineers, from 1775 to 1795, and since that period the Turkish Government have added others, and put the old ones in repair. And this arrangement is such, that a vessel coming from the Black sea is (1853) obliged to pass under the fire of 300 pieces of cannon, which are placed *en echelon* on each prominent point in a space barely 5 miles in length, and so that they may easily sweep the channel in all directions.

THE ASIATIC SHORE OF THE BOSPORUS.

Following the order of description maintained throughout this work we shall give, first, the description of the Asiatic shore of the Bosphorus, then

the European shore, follow with remarks on currents and winds, and conclude with the general directions for making the passage to and from the Black sea.*

SKUTARI.—The town of Skutari, or Uskudar, surrounded by numerous gardens and cypresses, stands on the Asiatic bank of the Bosphorus, opposite to the entrance of the Golden Horn, and is built on the site of the ancient Chrysopolis. Its streets are wider and offer a more lively appearance than those of Constantinople, and is the rendezvous of caravans arriving from the centre of Asia, and the point of departure of those going to Mecca. The position is admirable, and the view finer than at Constantinople, especially from mount Bulghourlu, which lies to the eastward of the town. Its population may be estimated at 35,000 persons of which the greater portion are employed in the production of silk.

A vast cemetery lies at the back of the town called the Dead Quarter, which is equally used by the Turks of Constantinople. At Skutari, water is obtained in abundance, and vessels lying at Constantinople are supplied during the warm season.

The sea shore of Skutari is bordered by a sand flat which extends $1\frac{1}{2}$ to 4 cables from the shore, and on the outer edge of which there is a depth of 5 fathoms. At the extremity of a rocky ledge, extending a cable from the north-west point of Skutari, is a rock nearly awash, on which is built a square white tower, with a lacework gallery, named Leander tower, at the foot of which is a small battery.

LIGHTS.—From Leander tower are exhibited two vertical *red* lights, 66 feet and 58 feet high respectively, and visible in clear weather from a distance of 5 miles.

Selimiyyeh barracks.—At a short distance to the southward of Skutari stands Selimiyyeh barrack, a large square building, flanked by four towers at its angles, and capable of containing 10,000 men.

To the north-eastward of Skutari are the two villages of Kusgunyuk and Istavros. Eastward of the latter, and near the shore, is the palace of Beyler Bey, painted yellow, and remarkable for the number of buildings which compose it.

The coast from Leander tower to Kandilli point is bold, and has deep water within a few yards. This side of the channel is rarely frequented by vessels going to the northward, as there are neither eddies nor anchorages in case of calms or a sudden shift of wind. To the southward of Khandili, and in the little bay of Yani-keui, a narrow zone is found where the water is slack.

* See Admiralty chart, Bosphorus, No. 1198; scale, $m = 2$ inches.

KANDILLI.—Off the point of Kandilli a shoal bank, on the outer edge of which there is a depth of 5 fathoms, extends half a cable into the strait.

LIGHTS.—Two vertical *red* lights, about 112 feet high, are exhibited from a white mast situated 110 yards from Kandilli point, and in clear weather should be visible from a distance of 4 miles.

Anadolu Hissari.—Between Kandilli and Anadolu Hissari is formed a bay, the shores of which are steep except near the latter place, where a fringing bank on which there is 9 feet of water extends half a cable into the strait.

At Anadolu Hissari another old Genoese castle is seen, which commands this part of the channel ; also a pretty valley, through which runs a small stream called the Soft Waters of Asia, where a great portion of the Turkish population of Constantinople, the women especially, assemble on Fridays to enjoy various amusements.

The two castles of Anadolu and Rumili Hissari, now in ruins, the latter on the European side, were built in the narrowest part of the channel, as the chief part of the northern maritime defences of the capital were formerly concentrated there.

A small bank, formed by the Kúchuk-Ghiök-Su, the rivulet which runs through the Valley of Soft Waters, extends half a cable from the shore.

From Anadolu Hissari the coast trends nearly due north as far as Khanlijeh, when it trends to the eastward. Between the two places mentioned the water is always slack, of which advantage is always taken in southerly winds.

LIGHTS.—On Khanlijeh point, about 100 yards inshore, are exhibited from a white mast, two *red* lights placed vertically at about 92 feet above the sea, and visible in clear weather from a distance of 4 miles.

Chibukli bay.—The little bay of Chibukli affords no good anchorage, owing to the great depth of water, and being open to the strength of the current.

INJIR and BEIKOS BAYS offer a large and safe roadstead for a considerable number of vessels, sheltered from the influence of the main current, which, in crossing this great bight, is diverted into a zone of weak northern eddies within 4 cables of the shore. The village of Yalikioi lies to the northward of Beikos, and that of Injir to the southward.*

Vessels generally prefer the bay of Beikos to that of Injir, and anchor in 18 to 26 fathoms, at about 2 cables from the shore abreast of the villages of Yalikioi and Beikos ; whereas, the anchorage off Injir is much obstructed by a mud flat, extending 3 cables from abreast of the Old minaret, and

* See plan of Beikos, Umur, and Buyukdéré bays on Admiralty chart, No. 1,198.

carrying only 6 to 15 feet, with some points of rock and ledges of gravel on its outer edge. Vessels should moor as taut as practicable, and great attention is requisite to keep the hawse clear.*

Water.—At Beikos there are numerous fountains from which a fleet might be supplied with water, but long hoses are required to fill the casks in the boats, as they must lie some distance from the shore. During the dry season caiques come from Constantinople and obtain water for the supply of that city.

A fountain in the Sultanie plain between Injir and Beikos might supply a small vessel after the first rains, and another at Chibukli might supply a large vessel, and thus prevent an inconvenient pressure upon the chief watering place at Beikos, if a squadron were lying there, where, out of eight cocks only two would be awarded to the shipping.†

The small bay off Sultans Valley lies between Selvi Burnu and the north point of Beikos bay, on which stands an outpost of the Health Office. It has a depth of from 7 to 12 fathoms mud, mixed with sand, and is fringed by a bank extending from a quarter to three-quarters of a cable from the shore, on the outer edge of which are 5 fathoms. The bay is named after that picturesque valley, which is studded with trees, and in which is seen a kiosk belonging to the Sultan. Two little streams run through the valley into the bay; but as the water is obtained with some difficulty, it is preferable to get it from Beikos, which offers more convenience.

English ships of war on this station sometimes moor in this bay N.E. and S.W. with 50 fathoms on each cable, in from 8 to 10 fathoms, but the most sheltered anchorage is with the French Ambassador's flagstaff at Therapia W.N.W., Kiobashi point S. by W. $\frac{1}{2}$ W., and Selvi Burnu N.W. by N.

SELVI BURNU.—The promontory of Selvi Burnu is likewise named Unkiar Skalessi, and a monument, in the form of a pyramid, has been raised there to commemorate the last treaty between Turkey and Russia in 1832, and bears the following inscriptions in Turkish:—

“This plain has given a short hospitality to the Russian army. May this stupendous stone perpetuate its remembrance. May the alliance of the Two Courts remain as firm and as solid. And may that event be ever renowned in the annals of friendship.”

Selvi Burnu is fringed by a bank, the outer edge of which has a depth of 5 fathoms and is half a cable from the shore.

Between Infir bay and Selvi Burnu the channel current is but little felt

* In November 1853, the allied fleets of Great Britain and France, consisting of 16 ships of the line, 1 frigate, and 10 steam vessels anchored in Beikos bay, but the anchorage of Buyukdéré, on the opposite shore, is preferable.

† Remarks by Commander T. A. B. Spratt, H.M.S. *Spitfire*, 1853.

inshore, but there are generally slight eddies which will assist vessels in working to Selvi Burnu.

ENGLISHMAN or UMUR BANKS, although lying in the widest part of the channel, are dangerous to the navigation of the Bosphorus on account of the current which sweeps across them from Mezar Burnu. Their north-eastern edge, of 3 fathoms with 5 fathoms close to, is 3 cables S.W. $\frac{1}{4}$ W. from the southern extreme of Mujue or Umur point the north extreme of Umur bay; the house on the summit of Giants Mountain bearing E. by N. $\frac{1}{2}$ N., and open to the right of the first quarry in the northern part of Umur bay, Kefch-li-keui minaret in Buyukdere bay W. $\frac{1}{2}$ S. The northern edge of 5 fathoms lies N.W. three-quarters of a cable from this spot. There is also a small patch of 5 fathoms S.W. $1\frac{1}{2}$ cables from Mujue point.

From the northern edge of 5 fathoms the banks extend 9 cables in a South direction and terminate at $2\frac{1}{2}$ cables to the N.W. of Selvi Burnu, the north point of the bay which lies at the foot of Sultans valley; their breadth varies from one to 2 cables.*

These shoals are separated by a channel running east and west, three-quarters of a cable in breadth from their edges in 5 fathoms, and having a depth of from 6 to 13 fathoms water, but the channel cannot be made use of as the current sweeps across it. They thus form two distinct banks, of which the larger, sometimes named Selvi bank, is to the southward, and occupies two thirds of the whole length; this bank has a depth of 6 to 18 feet, over a bottom of sand and gravel with stones.

The smaller and northern bank has 9 feet least water.

The water on Englishman banks is often discoloured.

Buoys.—The south and south-west sides of Selvi bank are marked by buoys; the southern buoy is white with staff and triangle.

As vessels generally pass westward of Englishman banks, and round to at the south end, these buoys are most useful, as, in keeping close to the bank to avoid being swept down the Bosphorus, vessels frequently ground on the edge.† The buoys, however, are not to be depended upon.

LIGHT-VESSEL.—The south-west side of the northernmost of the Englishman banks is marked by a light-vessel which exhibits at an elevation of about 46 feet three *red* lights placed in the form of a triangle, and visible in clear weather from a distance of 4 miles.

Caution.—The light and buoys on Englishman banks are not to be depended upon.

* See plan of Beikos, Umur, and Buyukdéré bays on Admiralty chart, No. 1198; scale, $m = 3\frac{1}{4}$ inches.

† Commander W. J. L. Wharton, H.M.S. *Shearwater*, 1872.

Clearing marks.—The Sultan's kiosk open to the southward of Selvi Burnu, and bearing S.E. by E., leads to the southward of Englishman banks. The tall house on summit of ridge in line with centre of Telli fort leads westward of the banks. And the tree near distant tall house bearing N. by E. $\frac{1}{4}$ E. and just open of Bushy park leads eastward of the banks.*

UMUR BAY, in the mouth of which lie Englishman banks, is about a mile long and about a quarter of a mile deep, and has a depth of 5 fathoms at a quarter of a cable from the shore. This bay, the quarantine ground for vessels arriving from the Black sea, affords excellent and much frequented anchorage in the eddy current which there prevails, in 10 to 13 fathoms, mud, at $1\frac{1}{2}$ cables from the shore.

MADSCHIAR KALESSI.—Nearly half a mile to the northward of Mujue Burnu stands the large fort of Madschiar Kalessi, armed with 54 guns and 2 mortars.

At about half a mile to the eastward of Madschiar Kalessi rises a lofty hill of a round form, named Yusha-dugh, or Giants mountain, which serves as a mark for vessels from the Black sea entering the channel in the day-time. Its sides are covered with vegetation, and on its summit stands a large white building inhabited by some poor religious order, who live by the charity and offerings made by numerous pilgrims that visit the tomb of the giant.

Madschiar bank.—To the north-east of Madschiar Kalessi, and extending a cable in that direction, lies a rocky bank three-quarters of a cable long and having 5 fathoms on its outer edge and only 5 feet in the middle, where the signal staff of Madschiar Kalessi bears S.W., distant 2 cables. Vessels closing the coast of Asia in coming from the northward will avoid this bank by keeping the small battery or minaret, which lies a little to the southward of Kirtch point on the European shore, open to the westward of the west extreme of Madschiar Kalessi.

Majar bay.—Between Madschiar Kalessi and Kavak point a deep bay is formed where the channel current is only slightly felt. The coast about this bay being high, causes calms with the winds from the southward and eastward; vessels rarely anchor in it, there being 17 fathoms at only a cable from the shore, and when passing up the channel with a fair wind they give it a wide berth to avoid baffling airs under the high land.

KAVAK POINT.—On this point is situated the fort of Kavak, armed in 1853 with 41 guns and 4 mortars. It faces that of Rumili Kavak in Europe, from which it is distant nearly 6 cables, and this being one of the narrow parts of the strait, is the best armed. Behind this fort stands the castle of Anadoli Kalessi, an old Genoese building, now in a bad state.

* See views on Admiralty chart, No. 1,198.

LIGHTS.—From a mast in a white house situated in the fort on Kavak point are exhibited two vertical *red* lights about 46 feet high, and visible in clear weather from a distance of 5 miles.

Between Kavak point and Fil-Burnu the coast forms a deep bight, called Kechili bay, having deep water close to the shore, except at its head, where a flat, having one to 5 fathoms water, extends a cable from the shore. A weak eddy sets round this bay to the northward.

FIL-BURNU.—On this point stands a battery built on a hill, extending to the westward.

The coast to the northward forms a small bay, which has a depth of one to 5 fathoms ; and along the high land of Fil-Burnu there are some rocks with steep edges, but they are close to the shore. From Fil-Burnu to Anatolia lighthouse the shore is studded with rocks, and although there is generally a depth of 5 to 12 fathoms at 2 cables from the coast, yet the anchorage is bad because of the currents.

POIRAS POINT on which is built a strong fort, faces that of Karibjeh in Europe, and forms one of the best fortified points in the passage.

ANATOLIA LIGHTHOUSE.—On the ancient promontory Hereum, at the north extremity of the Bosphorus on the Asiatic shore, about 2 miles S.E. $\frac{3}{4}$ E. from Roumili lighthouse, stands Anatolia lighthouse, a white stone tower 65 feet high, which exhibits at an elevation of 249 feet above the sea a *revolving* light. The light shows alternately a *red* face followed by two *white* faces or flashes at intervals of *two minutes* each ; the light gradually increasing and decreasing, but never totally eclipsed ; in clear weather it should be visible from a distance of 20 miles. But being badly attended is seldom seen at that distance.

The lighthouse being built on elevated ground may be recognised during the day, by vessels coming from the Black sea, by the tower being lower than that on the opposite shore, and only of a single diameter ;* and likewise by a large white building on a high hill to the south-east of it. The fort of Anatolia lies at the foot of the tower.

THE EUROPEAN SHORE OF THE BOSPORUS.

CONSTANTINOPLE.—This great city, the ancient Byzantium of the ancients, and now called Eis-ten-boul, or shortly Stamboul, by the Turks, is built on the triangular promontory which forms the west side of the south entrance to the Bosphorus. It is surrounded by an old wall or rampart, flanked by 20 towers, with a good moat, and pierced by 28 gates, of which 14 open towards the harbour. Near the gate of Adrianople are still seen

* See view on Admiralty chart, Black sea, No. 2,214.

the ruins of the palace of Constantine, and in the wall the breach where the last Greek emperor was killed. Both towers and walls (which are triple) are in a very bad state, and could not be considered as furnishing the means of serious defence. The castle with the Seven Towers has, however, been repaired, and its name shows the nature of the fortification, which consists of seven towers, united by galleries.

Constantinople, like ancient Rome, covers seven hills, and its population, including the suburbs, may be estimated at 600,000 persons. Its houses, about 160,000, are mostly built of wood, and consequently exposed to numerous and terrible fires; and its streets are narrow and badly paved.

There are about 214 mosques in the city, of which the most remarkable are the formerly Christian church of Saint Sophia, built by Justinian; the mosque of Sultan Achmet, which has six minarets; that of Sultan Soliman, and that of Sultan Osmonuff. There are, besides, 300 little chapels or messjids.

The monuments which formerly embellished Constantinople are almost all destroyed, and their fragments used in the different buildings of the town. There is, however, still to be seen on the square of the Hippodrome an Egyptian obelisk of red granite, called after Theodosius; several cisterns which bear the stamp of Roman grandeur; and the famous aqueduct near the barracks.

The two principal bazaars are the Egyptian, where all sorts of spices, medicines, balms, resins, and other productions of the East are sold; and the Great Bazaar, which forms quite a town in the heart of the city. Its long streets are all covered over, and have on each side shops full of the most precious stuffs of eastern manufacture. Bazaars are peculiar to the East; Constantinople has 30 of them; they are towns within towns, uniquely consecrated to trade, each different species of goods being collected in the same street. They are shut every evening at sunset; and here, the trading population, being almost entirely composed of Armenians and Jews, retire to the opposite side of the harbour, in the town of Galata.

The chief manufactures are those of silk and cotton fabrics, fire-arms, morocco leather, saddlery, horse trappings, shoes, and other articles of ordinary use and consumption, also meershaum tobacco pipes. The fisheries of Constantinople are important, the harbour and adjacent sea abound with shoals of tunny and sword-fish, and the "sweet waters" with a profusion of fresh-water fish.

Exports.—The exports are chiefly silk carpets, hides, wool, goats hair, potash, wax, galls, bullion, and diamonds. The trade is mostly in the hands of foreigners.

Imports.—Are chiefly corn, iron, timber, tallow, and furs from the Black sea, cotton and woollen stuffs from England.

Shipping.—During the year 1873, 7,967 vessels of foreign nations entered the port of Constantinople. Of this number, 2,688 were Greek, 1,278 Italian, 1,242 British (with an aggregate tonnage of 778,000 tons), Austrian 1,105, Russian 853, besides vessels of other nationalities.

In 1873 there were 40 passenger steam vessels plying between the Golden Horn, Bosphorus, and the Marmara islands and the neighbouring seaside villages. In addition to the above there are numerous tugs.

Caiques of graceful appearance are constantly gliding about the Bosphorus; and their light, sharp, and swift build enable them easily to stem the currents, however strong or rapid. Their hire is moderate, and under all circumstances they are preferable to ships boats.

Serai.—At the eastern extremity of Constantinople, and facing the Bosphorus, lies the Old Seraglio, which occupies all the point of the peninsula. It is of a triangular form, and surrounded on its north, south, and east sides by high gray walls, which join those of the city, and which are so high that they scarcely allow the roofs of the buildings of this prodigious palace to be seen, the eye only distinguishing a confused mass of gilded domes, surmounted by the crescent, and everywhere relieved by clumps of cypresses.

The quay, which skirts the eastern wall of the Seraglio on the Bosphorus, is nearly three-quarters of a mile in length from north to south; and from the termination of the mud bank at Seraglio point, its south extremity, where there are only 12 feet water at $1\frac{1}{2}$ cables from the point, it is free from danger outside the distance of one cable, so that a steam vessel may pass very close, if she can stem the current, which at this spot runs sometimes $4\frac{1}{2}$ knots.

Two batteries, armed with bronze guns of light calibre, are placed on the quays along the walls of the Seraglio, and the two guardhouses are conspicuous from their being painted red and black.

GOLDEN HORN, the port of Constantinople, is a good harbour, always crowded with vessels of all nations. It was known by this name in the time of the Greek Empire being then the centre of the commerce of the world, whose produce it received. It extends 3 miles in a north-westerly direction, and then a mile to the N.E.; its breadth varies from 2 to 4 cables from its mouth up to its northern extremity, which forms a basin named in Turkish, Keaghid-Khaned, or the Soft Waters of Europe, and into which flows a small stream named the Lykus.

To facilitate the immense intercourse to which the commercial transactions of Constantinople and Galata give rise, two bridges of boats have been thrown across the harbour which separate the naval from the commercial parts of the port. The commercial or outer port is formed by the western bridge to the north-west, the quays of the city to the south,

and the quays of Galata and Top-khana to the north. The depth of water is 12 and 13 fathoms along the northern quays, 20 to 22 fathoms in the middle, and 10 to 13 fathoms off the quays of Constantinople, over mud bottom. The outer anchorage at the entrance of this port is never used, in consequence of the violence of the currents.

The naval port lies between the western bridge and the Keaghid basin, and to it particularly applies the name of the Golden Horn. It is 4 cables in breadth, and is reserved for the vessels of war, which anchor off the north quay, abreast of the naval arsenal, where they moor generally W.N.W. and W.S.W. in 16 fathoms, mud. The arsenal contains large stores for the fleet, stocks and slips for building and repairing ships, victualling magazines, steam saw-mills, barracks for the officers and seamen, and a naval school. Vessels of the largest size are built here.

Docks.—There are three dry docks at the naval port; two of the following dimensions, namely, length over all 220 feet, breadth of entrance 60 feet, and depth over sill 25 feet; the other, length over all 400 feet, and breadth of entrance 70 feet. There are no facilities for the repair of merchant vessels.

Between the Keaghid basin and the Golden Horn lies the reach called Stamboul Liman, having a depth of from 2 to 7 fathoms, and which extends as far as the village of Eyoub, which stands on its left bank and near the Sultan's palace; it is in a mosque of this village that the Sultan comes to gird on the sword of Othman when he ascends the throne.

After passing the village of Eyoub comes the Keaghid basin, the boat channel to which is marked out by stakes, beginning abreast of a large barrack on the right shore. This is much frequented on holidays, and Turks and Franks mix together without distinction.

Pera stands, with the towns of Galata and Top-khana, on the rising ground opposite Constantinople, and between it and the Bosphorus. Its houses are irregular; its streets narrow, dirty, and badly paved; and is bounded by large cemeteries and promenades planted with cypresses.

It is at Pera that the Franks enjoy all their rights and privileges; they may possess houses, gardens, and practise in perfect security the exercise of their creeds. The ambassadors of foreign powers reside there, in magnificent palaces, amongst which the most remarkable are those of Russia and France. A few years since the Turkish Government authorised the establishment of Christian churches, and it frequently happens that the voice of the muezzin* calling the faithful to prayer, from the top of the mosques, is interrupted by the sound of a Christian bell.

* The voice of the muezzin replaces in the Mahometan religion the bell of the Christians. The *Ezan* is the invitation to come to prayer, and is cried aloud six times in the twenty-four hours from the top of the minarets.

Galata lies to the south-east of Pera, and is an old town, built like it by the Genoese, and surrounded by an old loop-holed wall. There merchants of all nations have established their offices and warehouses. Its lower part is a vast labyrinth of mud and filth. The population consists of Armenians, Greeks, Jews, Maltese, Genoese, and the sailors of the numerous vessels which make fast alongside its quays.

On a high mound near the centre of the town rises a remarkable tower which has the appearance of a large minaret; from its top the view embraces the Bosphorus and all Constantinople; and from thence the alarm is given in the frequent fires which devour the four adjacent towns.

Pera, Galata, and Top-khana forms to the eye only one town, and occupy the whole face of the hill from the summit to the sea shore.

TOP-KHANA lies to the eastward of Galata, along the bank of the Bosphorus, and faces the Old Seraglio. It is a dull Turkish town, the greater part occupied by the Turkish army, especially the artillery, who have a large park there, and an exercising ground on the quay. Top-khana is to the army what the arsenal is to the navy.

A small bank extends half a cable off shore, abreast of the quay of Top-khana but, being beacons off with piles, is easily avoided.

Between Top-khana and Orta-keni stands the palace of Bëshik Tâsh, which has been a frequent residence of the Sultan since the palace of the Old Seraglio was abandoned; and to the S.W. of Bëshik Tâsh, near Fundukli, another splendid marble palace has been erected, ornamented with colonnades, which border the banks of the Bosphorus. All this part of the shore is covered with magnificent houses, besides the two large villages of Dólma Baghcha and Fundukli.

Anchorage.—It is in the wide reach between Top-khana and Orta-keni that the Turkish fleet usually takes up its position in summer. There is anchorage all along this shore in 10 to 17 fathoms, and vessels can either make fast to it or remain at single anchor. Care should be taken not to anchor near the line where the two currents meet, as they produce violent reactions which sheer vessels in all directions, and may cause collisions. It is easy to perceive on the surface of the water the boundary line which separates the permanent current from the eddies.

In anchoring between Top-khana and Orta-keni, a berth should be taken to the northward of the Sultan's new palace, as that part is generally clear of merchant vessels, and is more sheltered from south-west winds. The current too is generally slacker than off Top-khana, where the eddy is nearly as strong as the stream. The depth to anchor in is from 18 to 26 fathoms, over mud and gravel, good holding ground, the steepness of the bank aiding the hold in southerly winds.*

* Remarks by Commander T. A. B. Spratt, H.M.S. *Spitfire*, 1853.

Orta-keui.—Orta point is easily distinguished by a white mosque on the extreme point ; from the point a small spit projects about 30 yards, which would have been scarcely worth mentioning but that vessels are too fond of hugging that point.

Water may be obtained at Orta-keui, from a fountain which also supplies the inhabitants.

DEFTERDER POINT.—At Defterdar point the central current is much weakened, and is often driven back by the counter current from Constantinople, which reaches as far as this point, and then turns off into the general S.W. current. Vessels, however, frequently find it difficult to pass with light southerly winds, and, as at Arnaut point, to the northward, are obliged to warp round it.

DUIMI and KURU SHOALS.—About half a mile northward of Defterdar point are two shoals, $1\frac{1}{2}$ cables apart, and lying nearly parallel to the shore. Duimi, the southern shoal, having a depth of 3 feet, is a cable long north, south, half a cable wide, and lies half a cable from the shore ; there is a depth of 7 to 10 fathoms between the shoal and the shore, but no safe passage. The northernmost, or Kuru, is nearly of the same size as Duimi, and lies abreast of the village of Kuru Chesmeh, a cable from the shore ; it has a depth of 4 feet. There being 7 to 12 fathoms between the shoal and the quays, a vessel may pass between it and the village, though at all times it will be more prudent to leave it to the westward, unless wishing to make fast to the shore. The south extreme of Duimi bank, and the north extreme of Kuru bank are each marked by beacons of stone built on them. Vessels frequently make fast their hawsers and cables to these banks.

There is anchorage between the two shoals.

LIGHTS.—Duimi bank is marked by two *green* lights placed vertically at an elevation of about 39 feet above the sea, and which should be visible in clear weather from a distance of 4 miles. The lights are exhibited from a mast on a white house which is built on Duimi rock.

Between Defterdar point and Arnaut point there is a zone of eddies setting to the northward, which sometimes, near the shore, are strong, but all of which turn off on reaching Arnaut point and unite with the main current. Small vessels frequently land their crews and track round the point. There is anchorage under the point in from 14 to 17 fathoms, sheltered from the current but within a cable of the shore.

There are good anchorages off the quays of the different villages which stand on this shore, the largest of which is that of Kuru Chesmeh, near which is seen the palace of the Sultana Valideh.

In this part of the Bosphorus merchant vessels moor, either alongside the wooden quays built in front of the houses, or at right angles to the

shore, by letting go an anchor off the quays, and securing their sterns to them. This last is the most common practice, as less room is taken up; and there are not always posts to be found for the hawsers.

BEBEK BAY, which lies between Arnaut point and Rumili Hissar, is deep, and as the current never enters it, would afford some facilities for navigating the Bosphorus, were it not obstructed by a bank. This bank has a depth of only 3 to 6 feet water, and, from abreast the quays to the northward of Arnaut point, extends into the bay to the N.E. about 3 cables, where its termination is marked by a white stone pyramid, which also serves for warping ropes.

LIGHT.—From the white stone pyramid which marks the extremity of the bank in Bebek bay, is exhibited a *fixed* white light, 10 feet high, visible from a distance of one mile.

RUMILI HISSAR.—The point of Rumili Hissar is overlooked by a hill on which still stand some towers and an old fortified castle. It was from this point that Darius contemplated the passage of his army, and from this also the Goths and the Crusaders crossed into Asia.

Submarine cable.—A submarine cable is laid between Rumili Hissar and Kandilli point, thus connecting Pera with Skutari. Care should be taken not to anchor near the cable.

With light southerly winds vessels can run up to Rumili Hissar, nearly as far as the castle, to the southward of which they can either make fast alongside the stone quay or anchor in about 8 fathoms very near the shore.

LIGHTS.—From a white mast on the wall of the fortress of Rumili Hissar, 110 yards from the guardhouse, are exhibited two *fixed green* lights placed vertically at an elevation of about 46 feet above the sea, and visible in clear weather from a distance of 5 miles.

Devils Current.—In this part of the strait, which is only 4 cables broad, the current runs at the rate of 5 knots an hour, and is known as the Devil's current.

Bálta Limán is a small village nearly half-way between Rumili Hissar and Yeni-Keui; it gave its name to the treaty by which Russia agreed to enter the Danubian provinces only in concert with Turkey, and in case the population should rise in arms.

Isteniah bay, small and of a circular form, is sheltered from all winds and currents. At half a cable from its western side there is a depth of 5 fathoms, shoaling thence to the shore. Its entrance is a cable wide, and although the bay has a depth of 6 to 14 fathoms, vessels seldom use it, but

prefer working up in the eddy and anchoring under Kiobashi point, the latter being a better berth from which to weigh.

KIOBASHI POINT — Yeni-Keui Bank. — From this point a bank, having a depth of 5 fathoms on its outer edge, projects $1\frac{1}{2}$ cables from the shore. It begins at the 9-gun battery to the northward of the point, and borders the shore to the southward as far as the little port of Istenieh; and on this bank, about a cable from Kiobashi point, and two thirds of a cable from the shore, lies a sunken rock, having a depth of from one to 2 fathoms.

Anchorage. — A flat extends a cable outside Yeni-keui bank, on which vessels may anchor in 5 to 14 fathoms, sheltered from northerly winds, and also from the channel current, which, by its divergence from Kiobashi point towards the coast of Asia, causes a counter current that runs nearly up to the point.

Rumili Hissar in line with Khanlijeh point or Dereftar point, just shutting in with Khanlijeh point, leads outside Yeni-keui bank.

LIGHT-VESSEL. — On the edge of the bank off Yeni-keui is moored a light-vessel, painted red, which exhibits at an elevation of about 46 feet above the sea *three green* lights, placed triangularly, and visible from a distance of 4 miles.

THERAPIA BAY is small, but sheltered from all winds; it has a depth of 6 to 9 fathoms, but contains only a few vessels, which generally make fast alongside the quays. A vessel entering must avoid being set to the southward, and should therefore hug as much as possible the northern shore, for the current, which is but slightly felt in the bay, sets on to a sunken rock off the little mole which forms the southern entrance.

The eastern house on Bagtchi-keui point in line with Nalet point leads in 4 fathoms clear of the reef which is situated near the southern shore of the bay. Just inside of Nalet point is seen the corner of a wall round a plantation.*

Although a vessel in this bay would be in a good position to weigh with a southerly wind, yet it should not be generally chosen as a stopping place, it being difficult to get out of with light winds. It would be preferable to anchor on the opposite shore, either in Beikos bay or off Sultans valley.

The summer residences of the French and English ambassadors lie between Therapia bay and Kiritch point, and are built near the broad quay that fronts the Bosphorus. The French palace stands conspicuously on a fine terrace adorned with beautiful trees.

* Navigating Sub-Lieutenant E. J. Fleet, H.M.S. *Antelope*, 1874.

KIRITCH POINT has two batteries, one armed with six, the other with twelve guns and two mortars, which can rake all vessels in approaching it from the Black sea.

LIGHTS.—On the point close to the south-east end of Kiritch battery are exhibited two *fixed green* lights placed vertically at about 46 feet above the sea, and in clear weather should be visible from a distance of 4 miles. The lights are exhibited from a mast on a white house.

BUYUK-DÉRÉ BAY is formed between Mezar and Kiritch points, in front of a magnificent valley ; it affords shelter from all winds, and is the best anchorage in the Bosphorus.* The town occupies the north shore, and contains the ordinary summer residences of the ambassadors, consuls, and rich merchants of Constantinople, who live there in magnificent villas. A smaller village, named Kefeli-keui, lies on its south-west shore, near the south minaret ; the north minaret stands at the head of the bay.

Vessels may anchor in any part of Buyuk-déré bay in from 18 to 24 fathoms at its entrance, in 10 to 12 fathoms in the middle, and in 4 to 7 fathoms at its head, over mud and fine sand ; but taking care to avoid a spit of 9 feet extending a half to one cable from the shore throughout the bay. The best and most convenient anchorage is at about 3 cables to the southward of the town of Buyuk-déré in about 8 fathoms, with the north minaret bearing W. $\frac{1}{2}$ N. Vessels in picking up an anchorage often find so many craft riding in the bay that they cannot chose a convenient berth.

The main current from Mezar point increases in strength, and passing Buyuk-déré bay without entering it, sets directly on to the battery at Kiritch point, and also over Englishman banks. Although the current does not enter the bay, yet there is always in it a weak eddy, which becomes very irregular and changeable when the current in the channel is strong ; for it then sometimes sets up to Kiritch point, and to the northward of the village, and even beyond Mezar point, or Yeni-Mahalleh ; sometimes it has been known to reach as far as Buyuk bay, in the zone where the water is generally slack.

Near Buyuk-déré lie the reservoirs of water which supply Constantinople ; and a short distance up the valley at the head of the bay there is a wood of oaks and chesnut trees, called the forest of Belgrade. The first aqueduct met with is that of Bachikoug, then the reservoir of Valideh, named after the Sultana of that name, and enclosed in white marble ; the dike which retains the water is very high, and crosses the lower

* In 1832 a Russian squadron of twelve ships of the line anchored in this bay, and disembarked at the foot of Giants mountain an army of ten thousand men to protect the Sultan against the attacks of the Pacha of Egypt, after the loss of the battle of Konieh.

part of the valley, where rain water and that of a small stream is collected.

Near the miserable village of Belgrade, where the surrounding land, though so close to the capital, is scarcely cultivated, lies the second or small reservoir, with a circular basin, from whence the collected waters branch off either by aqueducts or underground to Pera and Constantinople. Further on is the village of Bourgas, with the Long Aqueduct, as well as that of Justinian, the beauty and grandeur of which monument attest the importance and utility of those structures to the capital of the empire. Three aqueducts of lesser dimensions are built over other small valleys, and complete the supply of water to Constantinople.

MEZAR POINT is bordered by a shoal bank, which extends half a cable seaward.

Northward of Mezar point the coast forms a small bay, in which anchorage free from the main current may be obtained. Here are seen the villages of Sariyar and Yeni-Mahalleh ; between these two places a small stream named Gul-dere discharges itself into the sea.

Telli point.—On Telli point stands a battery.

RUMILI KAVAK.—The castle of Rumili Kavak stands in a little bay in the narrowest part of the channel, and opposite that on Kavak point in Asia. It is an old Genoese building, which can no longer be considered as a defence.

A short distance to the northward of this castle there is a small battery, and close to the southward of it a large battery of 23 guns, one of which throws stone shot. At 4 cables to the southward of Rumili Kavak, on rather high ground which stretches into the Bosphorus, there is a third battery, one gun of which also throws stone shot.

DIKILI ROCKS.—Abreast of Rumili Kavak, and at nearly 2 cables from the shore, lies a cluster of rocks, which is a cable long N.E. and S.W., and three-quarters of a cable broad. The south end of Dikili rocks lies a little north of a line intersecting the two large forts which stand beneath the castles of Rumili Kavak and Anadolu Kavak. They are marked by an iron tripod beacon which is surmounted by a cage ball. Some of the rocks are above water, other show themselves in boisterous weather by their breakers. A good look-out should always be kept for them, especially during the night, as they are very dangerous.

Between Dikili rock and the shore there is a passage having a depth of 9 to 13 fathoms.

A vessel may anchor near the south-west end of Dikili rocks in 8 to 10 fathoms water. There is deep water within a short distance of the rocks.

From Rumili Kavak the coast extends nearly in a straight line to Buyuk bay, and is bordered by a shoal bank which extends about two-thirds of a cable into the strait, and in some places bordered by steep rocks, of considerable height, lying close to the shore. A weak current sets to the northward along this part of the coast.

BUYUK BAY.—In calm weather there is occasional anchorage between Rumili Kavak and Buyuk bay, at the distance of $1\frac{1}{2}$ cables, in 8 to 12 fathoms, but the best berth is to the southward of a powder magazine and a battery of 22 guns, which stands on a hill forming the south point of the little bay of Buyuk, but to the bottom of which no large vessel can go, as there are only 11 feet water. A flat extends for upwards of 2 cables into the channel from the north-east point of this bay, on the outer edge of which there is a depth of 5 fathoms.

KARIBJEH POINT.—The coast between Buyuk bay and Karibjeh point maintains the same character, and is fringed by the shoal bank before mentioned, and which extends two-thirds of a cable into the strait. On the outer edge of the bank there is a depth of 5 fathoms.

On a hill projecting to the N.E. lies the large battery of Karibjeh, round which are seen a few barns and a small village.

The coast to the northward of Karibjeh point forms a bight open to the N.E., and fringed by a shoal bank, in which the current generally sets to the northward, though weakly. A vessel may anchor in fine weather in this bight, at 4 cables from the shore, in about 10 fathoms water.

Papas point.—On a hill of moderate height named Papas point, and to the southward of a little minaret, stands a battery.

CAPE ROUMILI, the north-west point of the entrance to the Bosphorus, is surrounded by a belt of high rocks, with steep faces, on one of which, named Kyani island, is still seen the remains of an altar dedicated to Cæsar Augustus.

A vessel may anchor during S.W. winds in fine weather, or in a calm, at 4 or 5 cables to the S.E. of the Kyani island, in 15 fathoms, mud bottom.

LIGHT.—Roumili lighthouse stands on a rocky promontory, a third of a mile to the southward of a strong battery named Roumili Kalessi. The tower, which is formed of different diameters, exhibits a *fixed* white light which should be visible from a distance of 18 miles; but being badly managed, is seldom seen at that distance. To the northward of the tower a group of high trees serves as a day-mark for vessels making for the strait.

CURRENTS, WINDS, AND WEATHER.

In whatever direction the wind may be, the current always sets from the Black sea to the sea of Marmara, it being fed by the superabundance of water poured into the Black sea in winter by the great rivers, and in the spring by the thawing of the snow. Its general direction is that of the channel, but the numerous windings of which produce a variety of counter currents and whirling eddies under the points. Thus, on entering the Bosphorus from the Black sea, the current runs in a S.W. direction at the ordinary rate of about 2 knots, and parallel to the coast of Europe, towards Buyuk-déré bay, which it does not enter, to the point of Kiritch (half a mile to the northward of Therapia), over Englishman banks, and then washing Kiobashi point, but still keeping its S.E. direction, it shoots over to the Asiatic shore a little south of Injir bay.

It then runs along that coast as far as Khanlijeh, whence it is again deflected towards the European shore, and running at the rate of 5 knots between the two Hissars, or castles, of Rumili and Anadolu, it strikes the western shore at Arnaut point; at this part it has been named the Devil's current.

Between Arnaut point and Defterdar point it also follows the direction of the two shores, with a marked tendency to advance towards that of Asia, till having passed Defterdar point it directs itself almost wholly towards Skutari, whence it sets strongly over to Old Seraglio point, which divides it into two branches, the southern one falling into the sea of Marmara; the western stream filling the Golden Horn, rushes up as far as the second bridge at the entrance of the naval port and abreast of the dry dock in the arsenal. It is there met by the current coming down from the upper basin and turning round to the eastward washes the quays of Galata and Topkhana, leaving behind it a zone of eddies which vary every six hours.

It is difficult to state exactly how far this reaction extends northward: probably not beyond Defterdar point, where it again turns and mixes with the main current down the Bosphorus.

An eddy does, however, sometimes continue about $1\frac{1}{4}$ miles to the northward of Defterdar point, or nearly up to Arnaut point; and, what is very extraordinary, between these two points it is stronger there than that part of it between Topkhana and Defterdar point. This is a singularly favourable circumstance to the navigation of the Bosphorus, for it occasionally attains the rate of a knot, and extends in breadth more than 2 cables from the shore.

The bed of the current is generally the middle of the strait, and its edges are almost always defined by straight lines from point to point on the same shore; with the exception of Kiobashi point, round which it curves outside

the bank. Between these lines and the shore, especially in the bays and behind the points, it always leaves an eddy, which increases in strength according to the rapidity of the main current.

The strength of the current in the channel is nowhere uniform, and is influenced by so many different causes that only a general estimate can be given of it for the use of the navigator. The variations in the breadth of the Bosphorus are one of those causes, but the great fluctuations in its rapidity and direction are partly due to the angular forms of the two shores, the disposition of their points and elbows being such, that in some places—for instance, at Khanlijeh and at Khandili—the waters are occasionally driven from them towards the opposite coast with such violence that their first direction is almost reversed.

Again, the winds and the seasons are some of the principal causes which modify the current in the Bosphorus; and the period when the snow thaws, which is about the time when north and north-east winds prevail, may be supposed to bring on the maximum of its rapidity. This generally happens between the latter part of June to the end of August, when it sometimes attains the rate of 5 or 6 knots in certain parts of the channel, and is impossible to stem, unless with a fair wind and in a smart sailing vessel. This strength decreases with southerly winds, and when the principal causes just named cease to act, it becomes very weak, but is never completely checked, as some writers have asserted.*

Southerly winds, which are violent and lasting in the Archipelago, and are more or less felt in the sea of Marmara, have the effect of decreasing the action of the current both in the Dardenelles and the Bosphorus, especially if they blow after a gale from the N.E. which had left the level of the Black sea very low at the entrance of the Bosphorus, and if they should combine with one of the favourable circumstances already mentioned. By keeping back the water of the Black sea, a strong southerly gale raises

* "In October before the rains had set in, and the sun's influence was diminished in the Mediterranean, the current of the Bosphorus fluctuated according to the strength of the winds, and on the 19th, as we lay off Therapia during a southerly gale in the Archipelago and sea of Marmara, the current ran into the Black sea on that and the three following days at $2\frac{1}{2}$ and 3 knots; indeed so strong on one occasion as to sweep us from our anchorage."—Commander T. A. B. Spratt, H.M.S. *Spitfire*, 1853.

"On two occasions during H.M.S. *Shearwater's* visits, the current seemed to have ceased entirely without any apparent cause, calms existing at the time, but in certain places (as the Devil's current, and off Seraglio point) the water was still draining down. The Turkish fleet which lie in the strength of the current opposite Skutari were swung in different directions. I never saw the current run in the opposite direction, but was assured that in the winter, when south-west gales of long duration are not uncommon, it will do so with some strength."—Commander W. J. L. Wharton, H.M.S. *Shearwater*, August and October 1872.

the level of the Bosphorus, which rising, although amounting to 2 feet, is never enough to destroy the difference of level between Marmara and the Black seas, the first and absolute cause of the constant direction of the current to the southward.

If immediately following this rise, or if after a south gale, the wind shift suddenly to the north and blow hard, the waters of the Black sea are sent with such force into the Bosphorus that they break with such impetuosity on the advanced point of Kiobashi as to cause a strong counter-current, which very often extends half way across the strait.

At such time, except during the depth of winter, when both wind and current are very violent, a smart sailing-vessel, if advanced as far as Khanlijeh, and if well handled, by making short boards in the eddies and counter currents, might easily beat up to Kiobashi point. From thence she may cross to the coast of Asia, work up along Beikos bay, and then eastward of Englishman banks, by which process she would no doubt reach Buyuk-déré bay.

During the year 1872, an extensive series of observations was made by H.M.S. *Shearwater*, Commander W. J. L. Wharton, R.N., on the currents of the Dardanelles and Bosphorus. The observations in the Dardanelles were comprised between the 14th June and 30th October, those on the Bosphorus between 17th to 26th August and 12th to 18th October. The following is a general statement of the results:—

There is a general flow of the Black sea water through the Bosphorus, sea of Marmara and Dardanelles, to the Mediterranean, probably caused by the combination of three elements; firstly, the prevalence of north-east winds in the Black sea; secondly, the excess of water received from the large rivers over the amount lost by evaporation, at some seasons; and thirdly, the difference of specific gravities in the two seas.

Of these Commander Wharton's observations go to prove that the wind has by far the greatest influence.*

There is in general a counter-current, setting under the surface stream in an opposite direction, namely, from the Mediterranean to the Black sea; the under current seems to be dependent on the surface current, for, when the latter is slack, the under current is slack also.

The average rate of the surface current in the Bosphorus is estimated at $2\frac{1}{2}$ knots an hour and in the Dardanelles $1\frac{1}{2}$ knots per hour.

* The current in the Bosphorus is generally stronger in the afternoon than in the forenoon, and as the mornings are usually calm, and the north-east wind gains strength during the day, the increase in the strength of the current seems to be due to the wind.—Remarks by Commander W. J. L. Wharton, H.M.S. *Shearwater*, 1872.;

WINDS and WEATHER.—In the Bosphorus the usual winds are those from the North to N.E., and South to S.W. N.E. winds are the most frequent. N.W. and S.E. winds are but seldom felt.

The wind is generally variable at the time of the equinoxes, but during the summer months, from the beginning of May to the middle of September, the Metlem or solar winds blow very steadily from North and N.E. and bring fine weather. These winds spring up early in the forenoon, increase in strength until 3 or 4 p.m., and fall with the sun, calm prevailing through the night.

During the other months of the year the winds are variable in the S.W. quarter, except about full and change of the moon, when they sometimes veer to the N.E. S.W. winds, when strong, are generally accompanied with rain, but fine weather when they are light; in the winter they bring fogs.

In summer the winds never blow across the channel, although that may sometimes happen at either of its entrances. Thus in the morning light S.E. breezes occasionally come in from the sea of Marmara, and light N.W. winds in its northern reach, especially about Buyuk-déré bay. In the intermediate space, if there be land breezes they are very light, and do not reach mid-channel.

During the day, sometimes a smart gale springs up from the eastward, but it never lasts after sunset.

Northerly winds with fine weather freshen in proportion to the heat of the sun.

In summer it sometimes happens that the wind is from the S.W. in the southern, and from the N.E. in the northern parts of the channel, leaving it calm between Arnaut point and Selvi Burnu; and it is not of rare occurrence to see vessels going different ways, both with a fair wind. In these cases, if the breeze is fresh from the N.E., it will be certain to prevail, and the vessel coming from the southward should make immediately for an anchorage, unless prepared to work to windward. At other times S.W. winds blow strong at Buyuk-déré and in the upper part of the Bosphorus, while they are hardly felt at Constantinople, or they do not reach it till some hours later. When this takes place, the wind is sure to be from the S.E. in the Black sea, and favourable for vessels bound to Odessa or the sea of Azov.

In winter S.W. winds are frequent. When they blow hard, with an overcast sky, and the barometer down to about 29·60, they are generally accompanied with rain and last several days. As they moderate, the temperature becomes milder and the weather fine, which is in fact its usual feature during this season. Bad weather generally comes on after sunrise, and rarely lasts beyond sunset; if it should last all night a gale of wind may

be expected. In this season sudden shifts of wind are frequent and dangerous.

If light southerly winds commence to blow in the afternoon, immediate advantage should be taken of it; as in that case the wind generally veers round to the northward at midnight, and blows hard.

In winter, strong winds from the N.E. are always accompanied with rain, which generally clears away as they moderate.

Snow sometimes falls in February and the beginning of March, when the wind is light from the northward, with hazy weather.

Fogs.—In the months of October to February inclusive, and in the beginning of March, fogs, with calms and light winds from the north-east are experienced, but they clear off at sunrise. Fogs sometimes come on with light S.W. winds during the period mentioned, but clear in the afternoon.

From the middle of April to the middle of May the fogs prevalent in the Black sea generally enter the Bosphorus during the night and morning, filling the channel, and rendering it unnavigable; they more particularly cling to the coast of Europe, and seldom clear off till the sun is near the meridian. If they should hang in spots, especially towards the sea of Marmara, S.W. winds may be expected. These fogs are said to be unhealthy.

If the weather be fine in the Bosphorus, and the Black sea entrance at the same time be hidden by a fog bank, a shift of wind to the N.E. may be expected. In winter sudden shifts of wind are, as before remarked, frequent and dangerous, especially if, as it often happens, they come on at the same time as a thick fog: a vessel then caught aback in the middle of the channel would be in a very awkward position. A good look out should therefore always be kept when near the entrance of the Black sea, and no vessel should delay anchoring or making fast to the shore when these warning signs are observed.

Barometer.—It has been remarked that the barometer generally rises with northerly and N.E. winds, and falls with those from the S.W., but that it seldom or never rises above 30·15 or falls below 29·6. Thus, with fine weather and N.E. wind, it varies from 29·93 to 30·15; while with rain and N.E. wind it falls to 29·80; with squally and stormy weather, still lower; with S.W. winds and rain it stands between 29·65 and 29·75, but is generally above 29·80 with light S.W. winds and fine weather.

The following table is the result of a series of meteorological observations made in the Bosphorus during a period of five years, and may be of some use to the navigator.

MEAN of Five Years' Meteorological observations in the Bosphorus.

Month.	Winds.	Number of Days.	Observations.	Barometer.
January	Calm.	5	Calm, fine, but very cold - - - -	29° 90
	S.W.	3	Strong winds, with rain; sky overcast and mild - -	29° 65
	S.W. or S.	4	Light mild fine weather - - - -	29° 76
	N.E. or N.	12	Squalls, with rain when strong, and snow when light -	29° 76
	N.E.	7	Light and fine, but very cold - - - -	30° 05
February	Calm.	2	Calm, fine, and cold - - - -	29° 95
	S.W.	2	Strong, with rain; overcast, mild - - - -	29° 70
	S.W.	9	Light, fine, and mild - - - -	29° 76
	N.E.	7	Strong and squally, with rain and snow - - - -	29° 73
	N.E.	8	Moderate, fine and cold - - - -	30° 06
March	Calm.	4	Calm, temperate, and fine - - - -	29° 90
	S.W.	1	Strong, with rain; mild weather - - - -	29° 70
	S.W., variable.	9	Light and fine, very mild 3 days to the westward -	29° 80
	N.E.	5	Squally and variable to the northward; rain and snow -	29° 76
	N.E.	9	Light and fine; sometimes cloudy and hazy - - -	30° 00
April	Calm.	6	In calm weather sometimes cloudy, warm, and often rain.	29° 90
	S.W., variable.	12	Fine and mild; rather variable - - - -	29° 73
	N.E., variable.	2	Squally; rain - - - -	29° 70
	N.E.	8	Fine and light; rises in the morning and falls in the evening.	30° 10
	Variable.	3	Three days of variable winds from the westward and eastward.	—
May	Calm.	5	Fine and mild; sometimes cloudy - - - -	29° 93
	S.W., variable.	6	Fine; the light breeze hardly reaches the upper Bosphorus; one day strong from S.W. with rain.	29° 75
	N.E.	4	Strong, but dry; it does not often last - - - -	29° 85
	N.E.	15	Sometimes very strong in the day, but falls regularly in the evening.	30° 15
June	Calm.	9	Fine; rain sometimes in the afternoon - - - -	29° 93
	S.W., variable.	6	Fine; the wind often veering round the compass - -	29° 80
	N.E.	15	Wind regular in the day and often strong, but falls at night.	30° 15
	Variable.	1	Fine; squalls towards 2 p.m. - - - -	—
July	Calm.	4	Fine weather; very warm - - - -	29° 93
	S.W., variable.	3	Very light and variable winds; heat - - - -	29° 80
	N.E.	25	Fine weather - - - -	30° 10
August	Calm.	4	Fine weather; very warm - - - -	29° 85
	Variable.	3	Variable to the westward and E.N.E. - - - -	29° 85
	N.E.	23	Very regular and very fine weather on an average; 4 days of storms with heavy rain.	30° 15
September	Calm.	4	Sometimes rains in calm weather - - - -	29° 90
	S.W.	2	Strong, with rain; overcast, warm - - - -	29° 70
	S.W.	5	Light fine weather and warm; one day variable - -	29° 80
	N.E.	3	Strong, with rain - - - -	29° 75
	N.E.	15	Fine weather - - - -	30° 10
October	Calm.	3	Calm, overcast, and sometimes hazy - - - -	29° 85
	S.W.	3	Strong, with rain - - - -	29° 73
	S.W.	5	Light, overcast, and sometimes hazy - - - -	29° 85
	N.E.	4	Moderate rain, with haze which clears before noon -	29° 75
	N.E.	15	Fine weather; regular wind - - - -	30° 15
November	Calm.	6	Generally hazy in the morning - - - -	29° 90
	S.W.	2	Strong, with rain; overcast - - - -	29° 70
	S.W.	10	Light, but hazy; the haze sometimes lasting all day -	29° 80
	N.E.	5	Strong, with rain in squalls - - - -	29° 70
	N.E.	7	Light and fine; sometimes hazy in the morning -	30° 05
December	Calm.	2	Fine, hazy; the haze sometimes lasting all day -	29° 85
	S.W.	2	Strong, with rain; bad weather - - - -	29° 65
	S.W.	4	Rather fine, light, hazy; the haze lasts sometimes -	29° 75
	N.E.	7	Bad weather; squalls of rain and wind - - - -	29° 90
	N.E.	8	Rather fine, hazy; the haze clears off at noon; a little snow.	30° 05
	Variable.	6	Variable from N.W. to W. - - - -	—

DIRECTIONS FOR PROCEEDING TO THE NORTH-EAST.

SEA of MARMARA to CONSTANTINOPLE.—A vessel in approaching Constantinople from the sea of Marmara, on passing Stephano point will quickly observe on the port bow numerous domes and spires, surmounted by the golden crescent, and resembling the masts of a fleet at anchor. On a nearer approach, the south side of the city opens out with its numerous mosques and crowded houses, painted in various colours and the whole mass rising in the form of an amphitheatre from the middle of a forest of cypresses. Near its western angle is seen the tower of Marmara, on the margin of the sea, and the famous state prison, called the Castle of the Seven Towers.

On the Asiatic coast also will be seen the mountains of Maltepeh and the Two Brothers, which serve as marks for vessels coming either from the sea of Marmara or the Black sea, and to the westward of them rises mount Bulghourlu at the foot of which lies the large town of Skutari, with a forest of cypresses surrounding a vast cemetery.

A sailing vessel with a fair wind, having passed Stephano point (*see* directions at p. 78), should close the coast of Europe, in order to avoid the current and profit by the eddy, and also to be in a position to anchor under the walls of the city, if the wind should fall light or calm.

With a fair wind she may, preserving a depth of not less than 5 fathoms water, close the land between the Seven Towers and Seraglio point to within 3 cables, and after rounding the shoal off Seraglio point, to which point a berth of 4 cables should be given, should keep nearly in mid-channel, out of the strength of the current, until the port of Constantinople is well open; then edging across the current for the artillery quay at Top-khana, she will be able to gain an anchorage in the port. By acting thus a vessel will avoid the strength of the current, which sets on to Seraglio point, and will have time to stow her sails and pick out a good berth in the port. If, on the contrary, she should not keep out in the mid-channel, but close Seraglio point before the port opens, she would be likely, even with a good southerly wind, to be thrown by the current among the quays of Constantinople, along which she would be carried at a great rate, and get into collision with the vessels at anchor. Under such circumstances she should try to run ashore in some convenient spot, which would cause less damage than by being driven along the quays by the current.

Steam vessels may, after rounding the shoal off Seraglio point, approach within a cable of the quays, guarding against the current, which runs at the rate of $4\frac{1}{2}$ knots; but owing to the large number of vessels generally assembled in this locality, it is preferable to keep the Asiatic shore on board until abreast Leander tower, then steer across to the European shore. (*See* remarks on currents at p. 98.)

A sailing vessel with a foul wind, having worked from Stephano point to Seraglio point during daylight (*see* p. 80), should then edge away rapidly on the port tack to gain the coast of Asia, and make short boards in-shore out of the current as far as Leander tower. If a smart working vessel, and favoured with a fresh breeze, she will fetch on the starboard tack the port of Constantinople, by taking care to keep her clean full while in the current, and keeping her luff only when in the eddies on the coast of Europe.

If an indifferent sailer, she will be obliged to remain at anchor under the city walls, in from 9 to 13 fathoms water, and wait there for a more favourable wind.

Vessels turning to windward along the coast of Asia are often favoured by a counter current, which, although weak, sets to the northward. In standing in for the shore they should close it as near as possible, and keep the lead carefully going. If drawing more than 15 feet water, when abreast of Skutari barrack, they should not shut in Leander tower with the summer palace at Beshik-Tash.

Weak-handed vessels sometimes prefer in fine weather to kedge along the shore up to Leander tower, and then to cross the Bosphorus.

The anchorages along the coast of Asia (*see* p. 66) from a mile north of Fanar point to Leander tower, are generally preferable to that under the walls of Constantinople for vessels going farther up the Bosphorus, as it often happens that strong south and S.E. winds reach this anchorage while it is calm on the opposite shore. Also, there is no sea with northerly winds, and a vessel will lie sheltered from the currents of the strait.

Anchorage.—Golden Horn.—If possible, anchor well inside the port clear of the eddies, or along the quays of Top-khana and Galata, within $1\frac{1}{2}$ cables from the shore, in the space where the currents are always regular.

The two currents of the Golden Horn on its north and south shores (*see* page 98), leave between them and the middle of the port, where the water is quite still, a zone of eddies which vary every six hours, and in which it is impossible for vessels to lie quietly at their anchors. It is by this constant movement of the waters that the port is cleared of the filth that accumulates there daily from the four towns by which it is surrounded. These changeable eddies, especially in winter, under the influence of strong southerly winds which raise a short topping sea, produce much confusion in the port, for the vessels at anchor swing in various directions, and fouling each other, are subject to much damage. They are constantly fouling their anchors, and therefore drive in the slightest squall, so that it is not a rare occurrence to see vessels chains crossing each other in consequence of the long ranges to which they are obliged to veer.

Merchant vessels may also make fast alongside the quays between the bridges which serve as a limit to the naval port. If bound up to this spot they should make fast in the evening to the buoys placed for that purpose, and wait till the eastern bridge is opened in the middle during the night, when vessels shift in and out by warping and by the help of the currents. It will be well not to be at anchor in the neighbourhood of this bridge when these movements take place, for fear of being damaged by vessels shifting their berths.

Top-khana.—Small vessels of war generally anchor off the arsenal of Top-khana in from 16 to 22 fathoms, with Seraglio point S. $\frac{3}{4}$ W. A Turkish corvette is generally at anchor in the middle of the port, where the sea is smooth.

"It would be advisable for a stranger to anchor off Top-khana; a Turkish corvette is always stationed there on the edge of the current, and affords a good guide for the anchorage. Half a ship's length inshore of her the eddy runs slowly to the north-east. It will generally be found necessary to moor in 20 fathoms: open hawse to the north is best."* This also is the best anchorage for vessels bound to the Black sea, but waiting for pratique. See p. 112.

It is easy to distinguish the line between the currents ascending and descending the Bosphorus between Top-khana and Defterdar point; so that it will not be difficult, with a little attention, to anchor either inside or outside of that line.

Vessels loading or unloading generally make fast to the quays, with their sterns to the shore, and their anchors 75 fathoms off in the stream. They lie alongside of each other, and often in two or three tiers, with quarter-fasts to the posts placed on the quays.

CONSTANTINOPLE to the BLACK SEA.—In this passage vessels will generally have to contend with both wind and current, N.E. winds being the most frequent, and the current invariably running from the Black sea to the sea of Marmara. Fortunately, along each side there are many good anchorages, in which a vessel may bring up awaiting a fair wind. From Galata to Kiobashi point all the anchorages are on the coast of Europe; and in this distance, which embraces half the Bosphorus, there is no part of the Asiatic shore where a vessel can anchor in safety. But from Kiobashi point to the entrance of the Black sea there are many good anchorages on both sides, suitable for vessels of the largest size.

There are but few dangers to point out in the Bosphorus, for most of the rocks near the shore are marked with beacons, and the channel offers few obstacles, the depths varying from 5 fathoms close in, to 13 fathoms at a

* Remarks by Navigating Sub-lieutenant Thomas James, H.M.S. *Antelope*, 1871.

short distance; and in the middle of the north part of the channel, as far as Arnaut point, there are from 27 to 65 fathoms, and 16 to 28 fathoms thence to Seraglio point.

Vessels should always pass at least half a cable outside the beacons.

No stranger should attempt to navigate the strait after sunset.

[**Pilots** are sometimes engaged at Constantinople by masters of vessels proceeding to the Black sea and sea of Azov. This practice is said to be fraught with considerable risk, as there are few, if any, competent pilots for the difficult navigation of those seas to be obtained at Constantinople; the men who call themselves pilots are mostly stevedores and interpreters.]

A steam vessel or a sailing vessel with a strong fair wind should keep on the European shore, along which she should run, closing it gradually as Orta-keui point is approached. By acting thus she will keep in the eddy or counter current, the boundary line of which may be clearly perceived between Top-khana and Defterdar point, and will meet in her course to the northward no other difficulties than those arising from the numerous vessels that are always riding at anchor in this part of the Bosphorus; but taking care not to come within half a cable of Orta point, to avoid the small bank which fringes it. At Defterdar point the counter current loses its strength, but the main current is scarcely felt.

After passing Orta point she should again close the shore and keep in the eddy that reaches to Arnaut point, taking care to avoid Duimi and Kuru banks which are beacons with piles of masonry. A vessel may pass between these shoals and the village, but it will be prudent at all times to pass outside them, unless wishing to make fast to the shore. On clearing these banks she should again hug the shore till close up to Arnaut point, when by gradually edging across the current for the opposite coast, she will fetch a little to the southward of Kandilli. In rounding Kandilli, give it a berth of half a cable to avoid the fringing shoal of $3\frac{1}{2}$ fathoms, but be ready to give the vessel immediate port helm when the current catches her on the starboard bow.

Kandilli to Khanlijeh.—Between Kandili and Khanlijeh the shore must again be neared, recollecting, as Anadoli Hissar is approached, to keep a cable from the shore, in order to clear the bank which fronts the mouth of the Kuchuk-Ghiök-Su.

Having advanced as far as Khanlijeh point the vessel must again slant across the current and close the coast of Europe, where she will be greatly favoured by the eddy that runs from Bálta Liman to Kiobashi point, taking care in approaching that point not to open Rumili Hissar with Khanlijeh point to avoid Yeni-keui bank. A good berth should be given to the light vessel marking Yeni-keui bank, as her position changes slightly with the varying strength of the current.

With a fresh wind and slack current a vessel, abreast of Kandilli point, and having opened the castle of Anadolu Hissari, might edge over to the coast of Europe. She would fetch abreast of a large cemetery to the southward of the castle of Rumili Hissar, and should then run along that shore, keeping very near it, and following its sinuosities up to Kiobashi point. After clearing the bank off that point she must not again close the western shore until abreast of the battery south of Therapia, when she may again run along it at a short distance up to Buyuk-déré.

Kiobashi point to Roumili light.—From Kiobashi point a vessel must again sheer across the current and pass into Beikos bay, where she will profit by the eddy up to Selvi Burnu; when a course may be steered either to the eastward or westward of Englishman banks.

Vessels, well used to the navigation of the Bosphorus, frequently pass eastward of the banks when coming from the southward; for besides shortening the distance, they can in case of meeting with a foul wind, easily turn to windward, as the current is always weaker in this bay than in the main channel, and, moreover, when close in they will be assisted by a weak eddy to the northward. Caution however is requisite as Umur bay is generally crowded with shipping.

The tree near distant tall house N. by E. $\frac{1}{4}$ E. just open of Bushy park leads eastward of Englishman banks and westward of the shoal flat bordering Selvi Burnu. See view A. on Admiralty chart No. 1,198.

After passing Englishman banks the vessel should again close the coast of Europe at Mezar point, and run along that shore to the Black sea.

With a fresh S.W. breeze she may follow the Asiatic shore, and will find slack water in Majar and Kechili bays; but this course is not to be recommended, as from their great depth of water they afford no convenient anchorage, besides the liability to calms under Giants mountain.

Dikili rock.—A vessel may pass either eastward or westward of this rock; in the passage between the rock and the shore there is a depth of 9 to 13 fathoms.

Give a berth of $1\frac{1}{2}$ cables to the point which lies a third of a mile to the N.E. of Rumili Kavak, on which there is a guardhouse, as it is bordered by a flat and a rocky ledge extending a cable from the shore.

Give a berth also of $1\frac{1}{2}$ cables to the foul ground in the neighbourhood of Buyuk bay.

A sailing vessel with a light fair wind.—A vessel from the sea of Marmara proceeding up the Bosphorus with a light southerly wind, should close the coast of Asia, where she will be sheltered from the current as far as Leander tower, but taking care in nearing the shore not to shut in that tower with the summer palace at Beshik-Tash; and then crossing the current she will get into the zone of eddies ascending between Top-khana and Orta-keui. Some difficulties will be met with in following this shore,

on account of numerous vessels lying there ; but with great perseverance she may get up to Orta-keui, or if the wind should fail, good anchorage will be found. With very light winds, she will always be able to pass Orta point and Defterdar point, as the main current is but weak at the latter point, and if there be no wind she can warp round the point.

Having cleared Defterdar point the shore should be closed as near as possible to benefit by the counter current up to Arnaut point, but a vessel should take care to avoid Duimi and Kuru banks by passing at least half a cable to the eastward of them. If becalmed she can anchor or make fast alongside the quays.

Arnaut point is difficult to round with a light wind, for the main current sets strongly towards it ; she must, therefore, either wait for a fresh breeze, or if becalmed and pushed for time, she might employ the following means, which are the result of M. Mareuge's experience :—

The anchor should be weighed and the vessel warped as near as possible to the point and made fast, at not more than the vessel's length out of the current. Two thirds of the crew should be landed with the end of a hawser and a strong warp, on which a large eye has been made to throw over the posts. The warp should be hauled taut, the first rope let go, and the vessel sheered out into the stream, keeping the helm a-starboard to make her come-to quickly. When the warp leads right ahead, and the strain is off it, by the crew hauling on the hawser on shore, the vessel will advance against the current. The warp then slacks, when it should be shifted to a post farther on ; and the manœuvre may be thus continued until she reaches Bebek bay. It is, however, a work requiring much time and many hands : vessels of war can execute it easily with their numerous crews ; and commercial vessels may readily hire men from the shore to assist them.

Arnaut point being passed, a vessel can easily attain Rumili Hissar, as she will find slack water all through Bebek bay, taking care to avoid the flat running off the village, and if becalmed she can make fast alongside the stone quay under that castle.

A fresh breeze is necessary to pass Rumili point, and if the wind be light a vessel can warp round and along the quays as far as Bálta Liman, where she must be secured, as the full strength of the current will be met at this point, and cannot be stemmed without a fresh breeze.

If a vessel should succeed in getting through the current and to the northward of Bálta Liman, she will be greatly assisted by the counter current as far as Kiobashi point ; and then by edging over to the opposite shore into Beikos bay she will be able, even with light southerly winds, to get through that bay, and to the eastward of Englishman banks up to

Mujue Burnu ; when by again crossing the current to Mezar point she will be assisted by the eddies along the European shore, and so reach the Black sea.

A sailing vessel with a foul wind.—Although it is impossible, even with a smart vessel well handled, to proceed at once through the Bosphorus into the Black sea against a foul wind, from the strength of the currents in different parts of the channel, yet intelligent seamen, by great perseverance, and used to its navigation, well know how to advance step by step, and so as to be in readiness to take advantage of the slightest favourable change, and thus reach the Black sea long before those who wait patiently for a southerly wind. A few additional remarks may, therefore, be useful to strangers under these circumstances.

On arriving under the walls of Constantinople with fresh N.E. winds, a vessel should not anchor except from necessity, but try her utmost to cross the current and gain the Asiatic coast ; for by short boards, and assisted by the eddies along that shore, she will be able to reach Leander tower ; or if the wind should fail she can kedge up to it. She will then be in a position to cross the current with a fresh N.E. breeze, and fetch on the starboard tack under Dolma Bakcheh, where she may anchor or work to windward if the roadstead be clear.

Trading vessels generally prefer hauling along this shore by sending ropes to those at anchor, and in tacking or warping round the different points ; but it must be borne in mind that there can be no warping with a strong breeze from the N.E.

It is easy to perceive the boundary line which separates the permanent current from the eddies between Top-khana and Orta point ; and therefore a vessel should keep to the westward of that line.

After getting through the strength of the current at Bálta Liman, no more serious difficulties will be met up to the Black sea, for a vessel will always be able to fetch Kiobashi point and Beikos bay, where she will be in a good position to profit by the land breezes, which in summer often come off in the morning ; and if the eddies should slacken during the day, she can anchor in from 7 to 10 fathoms, in an easy berth from which to get under way.

If no land wind should favour her, she may with the daily N.E. breeze make short boards in Beikos bay, and also in Umur bay to the eastward of Englishman banks. In working in Umur bay care should be taken to watch the bottom, for on approaching Englishman banks they may be distinguished by the discoloured water over them. If she prefer passing to the southward of those banks, which is the most ordinary route, the vessel should be kept clean full, so as to cross quickly the main current, which

sets towards Therapia, and to fetch into Buyuk-déré bay, where she can turn to windward if there are not too many vessels riding there.

Smart vessels well handled can beat up this part of the Bosphorus with a fresh working wind, by making short boards within 2 cables of the European shore, where they will find either a counter current setting to the northward or at least slack water, taking care to avoid the shoal off Rumili Kavak, and the ledge to the northward of it already described. By avoiding the channel current they may reach the upper Bosphorus in the night.

In light winds and fine weather there is occasional anchorage along this shore, as already noticed, but a vessel must not expect to find shelter during strong N.E. winds in any part of the channel above Buyuk-déré bay; it will be therefore prudent to run for that bay, where there is safe anchorage in all winds.

With fine weather and a slack current a vessel may work in two or three days from Beikos bay into the Black sea.

Without a fair wind great activity is required, and it will be indispensable to turn to account the smallest favourable changes in wind and weather, and to observe especially the varying strength of the current, which, as it is always changing, must guide vessels in the choice of the different ways of proceeding that have been here given.

Vessels that can reach Selvi Burnu or Kiobashi point, have a considerable advantage over those who anchor to the southward of Orta point, for it generally happens in summer that southerly winds last but a very short time, and from these positions they are sure of being able to work into the Black sea.

PRATIQUE must have been previously obtained at one of the pratique ports in the Dardanelles, *see* pages 46, 47. On arrival at Constantinople, the bill of health must be shown; and should the vessel be proceeding to the Black sea, two firmans can then be obtained, one to pass on to the Black sea, the other to return again through the Bosphorus and Dardanelles. Should Constantinople be her destination, one firman only is needed to pass back again through the latter strait.

On proceeding to the Black sea the vessel must stop off Anatolia Kavak, near the north end of the Bosphorus, on the Asiatic side, to deliver one of the firmans to the officer who comes off in a boat carrying a red flag, and who also demands a *bakshish* or present, which has been fixed at the moderate sum of five piastres, or little more than a shilling.

On return from the Black sea, the vessel must again stop off Anatolia Kavak to take pratique for Constantinople, subject, as before mentioned, to

finer for non-observance; but if not intending to stop at Constantinople, she may pass straight through the Bosphorus.*

It frequently happens that persons unacquainted with the navigation of the Bosphorus, when bound to the Black sea, anchor at the entrance of the Golden Horn, and proceed thence to the consul's and health offices; but this is an unwise step, for if detained by foul winds or calms they will not be able to shift their anchorage; moreover the depth of water is considerable, and as before-mentioned there is great liability to foul their anchors. It would be more prudent to remain at the anchorage off Skutari, or anchor between Top-khana and Orta point, wind permitting, whence they can send their boat to obtain pratique.

Vessels should in all cases take advantage of light S.W. winds to push if possible, as far as Kiobashi point or Selvi Burnu, without paying unnecessary regard to the formalities they have to go through, in being cleared at the health office or the customs. Masters who are used to this navigation land at Galata, and leave their vessel in charge of their officers to take her to one of those anchorages, while they go through the requisite process, and if the wind holds fair, return on board next day, at an advanced anchorage. Those who do not like to leave their vessels take them as far as one of the anchorages above-named, and return in their boat with the current, in order to clear out at the health office.

RETURN VOYAGE.—Before finishing this work it may be useful to say a few words about making the Bosphorus when returning from the Black sea, as the rate of the currents, which always set to the southward, varies according to the season and the weather; and in coming from the southern Crimea or from the eastward they will deserve attention.

After making out the mouth of the channel, steer for its western shore, which is higher than the eastern, and is seen from a greater distance. Moreover the eastern coast should be avoided, because the current sets right upon it, and the great depth of water affords no good anchorage in case of bad weather. On clear days the mountains of Maltepeh and the Two Brothers are visible at a distance of 30 miles, and from almost any position in which a vessel may be.

Seven red cliffs also on the coast of Europe, beyond Molos, and one white cliff in Asia, are likewise good marks, even during fogs, as they seldom quite obscure the base of the mountains. On the summit of the high land behind Roumili lighthouse, on the European shore, a conspicuous tree is seen at 20 miles from the N.N.W., and on nearing the channel a forest and an old tower may be observed on a hill in Asia. These, with the

* Regulations as in force October 1872.

beacons erected on the shore of the Black sea eastward and westward of the Bosphorus, serve to identify the entrance of the Bosphorus.

During the night great care is requisite not to mistake the two lights at the entrance of the channel with the lights of the coast, for although their range is said to be 18 miles, they are generally badly attended and are seen with difficulty. Anatolia lighthouse may be known by day by a wall running down from it.

In the daytime the differences between the two lighthouses will also be a good guide to distinguish the entrance of the channel when within a short distance of it, that in Europe being formed by a double tower, or two towers of different diameters, one above the other, while that in Asia is a single tower.

Soundings are likewise a good guide to find the vessel's position on nearing the Bosphorus, and recourse should always be had to the lead, especially in foggy weather, or in the night.

Full directions for approaching the Bosphorus are given in Black sea pilot, second edition, p. 107–111; see also p. 6–11 and 103–107.

In returning down the Bosphorus from the Black sea into the sea of Marmara but few difficulties present themselves, especially in summer, during the period of the Metlem or solar winds, which are almost always fair, and the current is always favourable.

It has been stated that abreast Mezar point on the European side the current increases in strength and sweeps over Englishman banks, which thus become dangerous to navigation although lying in the widest part of the strait. Vessels coming from the Black sea are in the habit of keeping close to the western edges of these banks for fear of being carried by the current on to Kiobashi point. This precaution is unnecessary, as the current sets to the S.E. off that point, and would take them clear.

Vessels frequently ground on the edge of Englishman banks in trying to avoid being set on Kiobashi point.

Vessels coming from the northward with a fair wind will find it to their advantage to pass to the eastward of Englishman banks, as they will shorten their distance, and if caught in a calm, can anchor in Umur bay, which lies between Umur or Mujue point and Selvi Burnu, and affords an excellent anchorage in 10 to 13 fathoms, over a mud bottom, at about 2 cables from the shore; they will thus avoid Buyuk-déré and Therapia bays, from either of which it is inconvenient to weigh in light winds. Caution, however, is requisite as numerous vessels are generally at anchor in Umur bay.

In running through this channel from the northward, a vessel should close Mujue Burnu, and round it in about 6 fathoms, to avoid the current which sets rapidly over the two banks; and in running through the bay, she should keep the shore aboard, and not open Kiobashi point to the

westward of Selvi Burnu, until the tree near distant tall house is just open of Bushy park.* A berth of at least a cable should be given to the flat extending round Selvi Burnu, on which there are only one to 3 fathoms water.

The vessel has then only to be kept in the fair set of the main current until abreast of Kuru bank, when, if not intending to anchor between Orta and Top-Khana, she should steer towards the coast of Asia in order to avoid being drawn into the Golden Horn by the western branch of the current.

This precaution is of great importance, as deep-laden vessels have sometimes been carried away by the stream and obliged to anchor in deep water near the quays of Constantinople, from which position they could only be extricated by a steam tug, or by carrying out a kedge anchor.

* See view A on chart No. 1198.

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